Disease, Treatment and Health Behaviour in Sri Lanka

by
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Declaration

Except where otherwise indicated this thesis is my own work.

Indrani Pieris
11.11.1994

Dedication

I dedicate this thesis to my parents: K. Kamalawathie and Chandrasena Pieris whose own actions and care gave me a deep understanding of many issues with which this thesis is concerned.

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Abstract

This thesis applies the health transition theory to understanding Sri Lanka's transformation from a society marked by very high mortality to one noted for its extremely impressive health status. The primary data source used is the Sri Lankan Demographic Change Project (SLDCP), 1985 and 1987, which involved a combination of structured interviews, and unstructured in-depth interviews with family members including special interviews with older women on changes in health behaviour. The project was conducted in rural, urban and estate sites, and covered the three major communities in Sri Lanka, the Sinhalese, Tamils and Moors. Comparisons are also made with the data from the Sri Lanka Demographic and Health Survey, 1987.

Sri Lankans' health behaviour has played a critical role in Sri Lanka's health transformation: they have responded very effectively to a comprehensive public health system. The new health system was accepted despite being based on concepts totally different from earlier indigenous health notions. While the two health systems differed in their understanding of illness, they did not conflict as both were based on a practical and secular approach to illness and treatment.

The study examined the social, economic and cultural factors that affect the use of curative and preventive health services. There were important differences in health behaviour by ethnicity with less use of the public health system by the Muslim Moors, and the Tamils of the tea plantations. Explanations for these differences include differences in educational attainment and in indigenous approaches to health, as well as specific locational factors such as lack of good health facilities among the estate Tamil population.

The older women were emphatic that a very important factor in Sri Lanka's health transition has been education, particularly of women. Education has given women greater awareness of, and responsibility for their own and their children's health. Education has been particularly important for Sinhalese women who already had considerable cultural autonomy in decision making on health matters.

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Introduction

"Of all Gain, the Gain of Health is the Highest and the Best"

(Lord Buddha)

1.1 Introduction

Unprecedented mortality transition around the world has been a central feature of this century. During the period 1950 to 1990, average life expectancy increased by 10 years (from 66 to 76 years) in developed countries and by about 21 years (from 42 to 63 years) in less developed countries (Murray and Chen, 1993: 143). The mortality experience differs among countries in terms of magnitude, but in all, the achievement has been remarkable. This thesis examines the important research question of how a very poor country, Sri Lanka, has managed to achieve very low levels of mortality with only a moderate expenditure on health. The issue is examined by focusing on the important but neglected contribution made by social and cultural factors in influencing people's health behaviour.

1.2 Background to the study

Mortality levels in Sri Lanka have declined remarkably since the turn of the century. In 1900 the infant mortality rate was 178 per thousand live births (United Nations, 1976: 390). By 1988, the infant mortality rate had been reduced to 32 per thousand live births (UNICEF, 1990: Tables 1 and 5). Life expectancy at birth for both sexes had increased from 35.3 years in the period 1900-1902 (Nadarajah, 1976: 148) to 70 years in 1988 (UNICEF, 1990: Table 5). Even by the standards of the general reduction in mortality worldwide the decline has been striking.

Sri Lanka's present mortality level is very low compared with other countries in the South Asian region. These countries, in terms of GNP per capita, are poorer than Sri Lanka, but even when compared to similar or even high-income developing countries, for example Liberia, Lesotho, Mauritania, Indonesia, Senegal, and the Philippines, Sri Lanka has low infant and child mortality and very high life expectancy (Table 1.1). Thailand and Malaysia have much higher incomes than Sri Lanka but their infant and child mortality levels are not very different from those of Sri Lanka, which even enjoys slightly higher life expectancies than these two countries.

Table 1.1 Mortality indicators and per capita income for selected countries

Country	Income per capita 1989 US$	Government expenditure on health[b] 1986-90 %	Infant mortality rate per 1000 births (1990)	Child mortality rate per 1000 births (1990)	Life expectancy at birth in years
Bangladesh	180	10	114	180	52
Nepal	180	6	123	189	52
Afghanistan[a]	280	n.a.	167	292	43
India	340	2	94	142	59
Pakistan	370	1	104	156	58
Sri Lanka	430	6	26	35	71
Liberia[a]	450	7	134	205	54
Lesotho	470	7	95	129	57
Mauritania	500	4[c]	122	214	47
Indonesia	500	2	71	97	61
Senegal	650	n.a.	84	185	48
Yemen	650	n.a.	114	187	51
Philippines	710	4	43	69	64
Thailand	1,220	6	26	34	66
Malaysia	2,160	5[c]	22	29	70

Note: a Afghanistan and Liberian incomes are as of 1987.
b As a percentage of central government expenditure.
c UNICEF estimates.
n.a. Not available

Source: UNICEF, 1992: Tables 1 and 6

The issue then is how Sri Lanka has managed to reduce its mortality to such low levels and how it has managed to maintain such low levels of

mortality and high life expectation. The answer is not that Sri Lanka spends a particularly high proportion of its total budget on health; in 1986/87 only 5 per cent of the central government's expenditure was allocated to health (UNICEF, 1990: Table 6; World Bank, 1992). Ratios relating health infrastructure to population are less favourable than in some other developing countries. For example, countries such as Ghana, Zambia, Philippines, Thailand, Brazil, Paraguay and Turkey have more doctors and nurses per head than Sri Lanka, yet have higher infant and child mortality and a shorter life expectancy (UNICEF, 1992: Table 1; World Bank, 1988: Table 29).

Within Sri Lanka, areas with easy access to health services are not necessarily those with the lowest infant and child mortality and highest life expectancy. For instance in 1988 the country's capital city, Colombo, had 46 doctors per 100,000 population while Kurunegala, a remote district, had only 16 doctors per 100,000 people. The ratio of paramedics and midwives in Colombo district was 157 and in Kurunegala district 93 per 100,000 people (see Ministry of Health and Women's Affairs, 1990: Tables 10 and 28, for original figures used for estimating ratios). However, the life expectancy at birth for males was 64 years and for females 70 years in Colombo whereas the life expectancy at birth of Kurunegala males was 68 years and females 73 years (Ministry of Health and Women's Affairs, 1990).

It seems that the provision of health services by itself is not enough to explain the low levels of mortality in a country. I believe that the missing factor is health behaviour. In Sri Lanka, as suggested by Caldwell (1986), there are a number of socio-economic and cultural factors including female education and autonomy, and the political system, which together with direct health inputs have had a dramatic effect on mortality. It is the contribution of health behaviour to mortality decline that is examined in this thesis.

1.3 Theories of mortality decline

Researchers have put forward many theories to explain how and why mortality has declined in both developed and developing countries, without any theory being fully accepted. McKeown and colleagues attributed the mortality decline in England and Wales to improved living standards through increased income. Much of the evidence for a relationship between improved standard of living and mortality decline comes from developed country experience (McKeown and Brown, 1955; McKeown and Record, 1962; McKeown, Record and Turner, 1975) but in recent times this theory has also been tested for developing countries (Jayachandran and Jarvis, 1986; and Bhuiya,Wojtyniak and Karim, 1989).

McKeown and his colleagues (1955, 1962, 1975) argued that, in the nineteenth century, in England and Wales mortality declined well before the introduction of modern medical technologies; and they attributed the change in mortality to improved economic and social conditions. Rising standards of living contributed to personal cleanliness: use of washable clothing and use of soap; and through the provision of clean water, and efficient sewage disposal systems, sanitary reforms controlled many diseases that had caused high mortality (McKeown and Record, 1962: 95-97). Improved mortality in twentieth-century England and Wales was documented by McKeown et al. (1975: 407-422) as the result of the decline in three categories of disease: airborne, food or water-borne, and others. Airborne infectious diseases were associated with 45.3 per cent of the reduction of mortality from all causes and McKeown et al. (1975) argued that this reduction was brought about by higher per capita income and food intake, and improved nutritional status.

Other writers have emphasized improvements in modern health technology for mortality decline. Those who hold the theory that health

technology is responsible for the mortality decline argue that even where the incomes are lower advanced health technology can bring mortality levels down (Davis, 1956; Preston, 1975, 1980, 1985; DaVanzo and Habicht, 1986; DaVanzo, 1988). Preston (1975: 238-239) examined the relationship between life expectancy and income during the period 1930 to 1960 using a regression analysis of 30 countries. He found that income had little effect on the gain in life expectancy. He attributed over 80 per cent of the gain in life expectancy to advances in medical technology (Preston, 1975: 243-244). In a later study, Preston (1980) compared data from a large sample of countries for 1940 and 1970. The variables included were life expectancy, per capita income, daily calorie consumption and literacy. He showed that 50 per cent of the mortality decline in the less developed countries was due to structural changes (Preston, 1980: 304-307). The importance of structural changes in mortality decline has also been demonstrated in the case of Malaysia (DaVanzo and Habicht, 1986; DaVanzo, 1988).

A number of writers have stressed the importance of access to health services (Cleland, 1989; Fosu, 1989; Basu, 1990). The important factors here are the distribution of availability of services, the affordability of services, and the behaviour and practices of health care providers. These are undoubtedly all very important factors in the achievement of improved health, reduced morbidity and mortality, and, as is noted below, have been vital to Sri Lanka's health transition. These three factors are all on the supply side; what is equally important is the demand side and, in particular, the health seeking behaviour of the clients.

Woods, Watterson and Woodward (1988) and Ewbank and Preston (1990) have emphasized the key roles of cultural attitudes and beliefs, and personal behaviour as critical factors in mortality transition. These views were strongly expressed in a conference organized by the Rockefeller Foundation as a follow-up to the 1978 Alma Ata Declaration of good health

for all by the year 2000. The conference aim was to find out how a number of low-income countries, Sri Lanka, China, Costa Rica and Kerala (State of India), had achieved good health. Emphasis was placed on social, political, economic and cultural factors in the achievement of good health (Halstead, Walsh and Warren, 1985). Nations (1985) stressed in particular the relevance of cultural factors in child health in Sri Lanka, Kerala, China and Costa Rica. Since the conference a number of researchers have tried to identify the cultural and behavioural mechanisms through which the broader political and social factors, discussed at the `Good Health at Low Cost' conference, operate to produce good health.

Caldwell (1986) has argued using evidence from Sri Lanka, Costa Rica and Kerala that key sociocultural factors including the autonomy of women, political awareness which demanded the right to services, equality of intra-household food distribution and social policies to provide a minimum level of nutrition to the whole population, have combined with strong government expenditure on health and education, easily accessible health services, universal immunization, and widespread antenatal and postnatal medical care to improve health. A number of writers using evidence from India have indicated how the cultural background of people, particularly of women, has influenced health behaviour and affected health status (Basu, 1990; Visaria, Anandjiwala and Desai, 1990; Reddy, 1990; Sushama, 1990).

The advocates of the importance of cultural and societal factors in health transition have drawn on the work of a number of anthropologists who have stressed the importance of people's concepts of illness and its treatment in determining health behaviour, concepts that are influenced by pre-existing ideas (Opler, 1963; Khare, 1963; Obeyesekere, 1976; Beals, 1976; Chen, 1981; Ashraf, Chowdhury and Streefland, 1983). In Asia, for

example, illnesses are often attributed to causes such as bodily imbalance and the influence of supernatural beings.

The effect of health-related behaviour on mortality has been examined in the context of developed countries by Woods, Watterson and Woodward (1989), Ewbank and Preston (1990) and Preston and Haines (1991). Woods et al., (1989: 116-119) argue that in England and Wales changes in attitudes towards breastfeeding of infants and fertility regulation contributed to mortality decline. Similarly Ewbank and Preston (1990: 120-123) found that in the United States such simple preventive measures as breastfeeding of babies, hand washing before preparing meals, isolating the sick, boiling milk and water, cleaning babies' bottles and keeping flies away from milk and other food were major factors in the mortality decline. Ignorance of such simple preventive measures was responsible for the unfavourable mortality conditions experienced by the professional and urban groups in comparison to the lower social-class groups in the United States in 1900, which is the direct opposite of the developing country situation today (Preston and Haines, 1991: 198-205).

Recently all three theories described above have been criticized for being incomplete and insufficient, and lacking subtlety. Murray and Chen (1993: 149) argue that the existing theories ignore the contributions of the other theories, and have too short a time-horizon, that is the earlier theories consider only the short-term effects of income or technology or behaviour on mortality changes. Consequently, all these theories have failed to explain why mortality continues to decline even through short-term disruptions such as economic downturns. Murray and Chen have speculated on what they call an `assets approach', which takes into account aspects of all three former theories and will explain the interactive role of income, technology, and behaviour. This, they argue, would, unlike existing theories, allow the

consideration of the accumulated effect of health and social assets on the long-term mortality changes.

While Murray and Chen are right to state that a comprehensive theory of mortality decline cannot ignore the contributions of all theorists, this is not very different from what is suggested by many of those emphasizing the importance of changes in behaviour, or what is known as the health transition. Caldwell (1986 and 1992), for example, argued that in Sri Lankan and Keralan societies where favourable social characteristics such as female literacy, female autonomy, egalitarian social traditions and comprehensive local health systems prevail, mortality began to decline only after the introduction of modern health services. This was because people were educated and independent, and prepared to use them effectively.

Apart from Caldwell's (1986) short account based on secondary sources, and Caldwell and colleagues' (1989, 1990) discussions, no detailed analysis of the causes of mortality decline in Sri Lanka has considered the contribution of social and cultural factors. Following the analysis of the causes of mortality decline in England and Wales by McKeown and Record (1962) and McKeown et al. (1975), Meegama (1967, 1969, 1980, 1981) focused on the effect of modern health services and improved standard of living on mortality decline in Sri Lanka. The well developed health sector in Sri Lanka has undoubtedly been an essential factor in the country's favourable conditions of health, especially in its low infant and child mortality. It was particularly effective because the type of health services offered were not of a high-technological nature but more pragmatic, inexpensive, grass-roots-level primary health care involving local health workers. However, the dramatic nature of its impact requires the consideration of other factors including the willingness of people to use the available services, and the approach of individuals to health problems within the family, particularly mothers with regard to their children's

health. The role of social change resulting from widespread education, social reforms and cultural changes has not been thoroughly discussed, nor has the possible influence of the pre-existing traditional medical system on the acceptance of a modern health system been taken into account.

There is a need to examine more closely the health attitudes and behaviour of Sri Lankans to understand the reasons for good health in Sri Lanka. This will make it possible to test the health transition theory using the case of Sri Lanka.

1.4 Health transition theory in the context of Sri Lanka

The determinants of Sri Lankans' health behaviour have been studied by many anthropologists, who however have not attempted to analyse their findings in terms of Sri Lanka's mortality decline (Wirz, 1954; Ames, 1963; Obeyesekere, 1969b, 1975a, 1976; Amarasingham, 1980; Kapferer, 1983; Noten, 1985; Nichter, 1988, 1989; Nordstrom, 1988; Waxler-Morrison, 1988; Wolffers, 1988; Sachs, 1989). These authors have examined the relationship between Sri Lankans', usually Sinhalese, concepts of disease causation and the types of treatment used. Their findings show that Sri Lankans use two different health systems, Western and indigenous, that have mutually exclusive concepts of disease. Most people interpret the causation of disease according to indigenous theory, but that does not undermine their acceptance or trust in the efficacy of Western medical treatment. Obeyesekere (1969b: 137) remarked that

> the acceptance or rejection of Western medical cures must however be differentiated from the *interpretations* of disease. The acceptance of Western medicine does not imply an acceptance of Western theories of disease causation... Cures are accepted because they ameliorate the diseased condition, but what brought about the diseased condition is yet another matter.

Ames (1963) claims that for Sinhalese villagers Western medicine is simply another kind of magic, and just a substitute for the indigenous system of treatment. This implies that Western and indigenous treatments are closely related to Sinhalese ideas concerning disease. Waxler-Morrison (1976) argued that despite rapid social changes through modernization concepts of disease have not changed, even among the middle-class families of Sri Lanka. She noted that the beliefs of causes of illness are not consistent with the treatments they choose and argued that this was because people regarded Western medicine as another form of Ayurvedic therapy, the indigenous system of medicine existing in Sri Lanka. Sachs (1989: 345) concludes from a study of a rural Sinhalese population that

> Western medicines are interpreted in the light of popular theories of health, built on Ayurveda, and have already been integrated into thinking about the body, illness and therapy. The mutual confidence of practitioners and patients in the medicines helps prevent the misunderstanding of each other's beliefs from being uncovered. This confidence imbues the medicine with a magic, symbolic aura, giving the practitioners as well as the patients a feeling that they contribute in their way to solving the acute health problem ... Within the therapeutic encounter then there exist two different systems of knowledge through which the effectiveness of these medicines is integrated. The contradictory symbolic meanings of the medicines remain unrevealed, allowing patients and practitioners to communicate in a satisfactory manner.

In a more recent study Nichter and Nordstrom (1989: 368-369) argue that health care behaviour in Sri Lanka is not simply a result of the way people perceive disease, rather it is affected by their identification of suitable medicine and a practitioner. Their respondents referred to three fundamental concepts influencing the choice of the most suitable medicine and practitioner for a particular illness. The three concepts are: constitution, `one's inborn state of being and personal characteristics as influenced by heredity, cosmological forces, and the contingencies of the developmental process'; habit, `a patient's typical, accommodated response to a kind of medicine'; and the power of the hand, `a practitioner's personal capacity to heal a patient - these include not only a practitioner's knowledge

of body, habit and medicine but empathy and the quality of communication between the practitioner and patient'.

A proper analysis of the mortality transition in Sri Lanka requires an assessment of whether indigenous concepts of health have given way before the efficacy of Western treatment and have consequently become compartmentalized: some illnesses may be seen as suitable for Western medicine, but others not. Alternatively, indigenous health concepts may exist in harmony with Western medical beliefs, people perceiving Western medicine in terms of the concepts of traditional medicine. It is also possible that Western medicine predominates while most Sri Lankans fail to understand it. There is the general question of why one treatment is chosen in one circumstance and another in a different context. A related question which needs to be examined is whether the widespread use of traditional medicine has made the use of modern medicine more efficient by accustoming the people to perceive the need for treatment at an early stage of sickness, and to take further measures if the first treatment does not quickly achieve a cure. There is a need for a proper analysis which considers Sri Lanka's mortality decline in its cultural context, in terms of its people's beliefs and behaviour.

The anthropologists who have written about Sri Lankan health behaviour have been primarily interested in indigenous concepts of disease and treatment and how these beliefs are reconciled with the use of the modern health system. They have not looked at the wider issue of what motivates contemporary individual health behaviour, why some individuals and not others want to seek treatment for themselves or others such as children, and how this has contributed to the mortality decline. In particular they have not looked at the contribution of the various social and economic factors to the health behaviour of Sri Lankans. Nor have they studied the contribution of other socio-economic factors, such as education,

availability of health services, cost of the services, occupation and income to Sri Lankans' health behaviour.

The authors writing about Sri Lankan health behaviour have mostly focused on one group, the rural Sinhalese. Officially 80 per cent of the population of Sri Lanka live in rural areas although some areas designated as rural have urban aspects; the population of Sri Lanka is predominantly Sinhalese and there is also a wide range of choices in treatment available in rural areas. It would be useful, however, to know more about the health behaviour of the minority populations, the Tamils and the Muslims whose indigenous concepts of medicine differ in many ways from those of the Sinhalese, and of the urban and semi-urban population who live in a very different social context and are subject to different influences from those which affect the rural populations.

The influence of the family structure on health decision-making has also been neglected. In traditional extended families, where important decisions are made by their husbands or parents-in-law, women have little control over their children's health. When a child is sick the mother must wait until her husband or mother-in-law decides the child needs treatment (Caldwell, 1989: 106; Caldwell et al., 1990: 538). Such behaviour alters with female education and with changes in family structure, with important implications for the health of the women and their children (Caldwell and Caldwell, 1985 and 1991). It is important to analyse health behaviour at the individual and family level as well as the community level to see if community perceptions affect the way people make decisions about their health.

Thus most demographers have emphasized the role of medical intervention in Sri Lanka's mortality decline and largely ignored the importance of health behaviour in contributing to it. The anthropologists

have focused on health behaviour but mostly in terms of how modern health treatments are reconciled with indigenous concepts of disease and health treatment. They have not looked at the overall factors affecting health behaviour and how health behaviour has contributed to the mortality decline. An exploration of this area is the aim of this thesis. The following sections review the literature on the role of medicine on Sri Lanka's mortality decline, and anthropological evidence in Sri Lankan health behaviour.

1.5 The role of health services in Sri Lanka's mortality decline: a literature review

In Sri Lanka mortality levels began to fall in the 1920s, and this decline accelerated after 1945 (see Table 1.2). Mortality rates seemed to increase after 1900 but Sarkar argued that this was an artefact of improved registration (Sarkar, 1957: 22). Although there has been a vital registration system in Sri Lanka since 1867, the coverage of vital events was poor until the middle of the twentieth century. In 1953, when an investigation was carried out to test the completeness of birth and death registration, the registration of births was found to be 88.1 per cent complete and the death registration 88.6 per cent complete (United Nations, 1976: 378-379). It has been estimated that in 1967 the registration of births in the country was 98.7 per cent complete and the registration of deaths was 94.5 per cent complete (Gaminiratne, 1984: 4, Table 1.1). A survey carried out by the Department of Census and Statistics in 1981 to assess the extent of under-registration of vital events found that birth registration was 98.8 per cent and death registration 94.5 per cent complete (Gaminiratne, 1989: 10-11).

Although the registration of vital events has been reasonably good, there was some deterioration in coverage between 1967 and 1981. Commenting on this fact, Immerwahr and Pollack (1983: 12) noted that when the milk ration for infants was stopped in 1977 the registration of

births which had normally occurred 7-10 days after birth now tended to occur about three months after birth. The authors suspected that, if the infant died before the birth had been registered, then both events went unregistered. However, over 80 per cent of births in Sri Lanka take place in institutions and these births are supposed to be registered at the hospital before discharge. Only about 40 per cent of deaths take place in hospitals, but the required burial formalities ensure the registration of deaths, except in a few rural areas and estates (Gaminiratne, 1989: 11-12). Although earlier death rates were under-reported, the available mortality statistics provide a good basis for studying present mortality levels and trends in Sri Lanka as shown in Table 1.2.

Table 1.2 Trends in mortality measures and expectation of life at birth in Sri Lanka.

Period	Crude Death Rate	Infant Mortality Rate	Maternal Mortality Rate	Period	e° male	e° female
1901-05	26.7	171	-	1893-1901	36.4	34.2
1906-10	30.8	189	-	1910-12	33.4	29.3
1911-15	30.6	201	-	1920-22	35.4	31.0
1916-20	30.1	190		1945-47	47.8	44.8
1921-25	27.8	190	20.1	1946	43.6	41.6
1926-30	25.1	175	19.4	1947	52.7	51.0
1931-35	24.6	183	21.0	1948	54.9	53.0
1936-40	21.4	160	19.2	1949	56.1	54.8
1941-45	19.9	131	14.6	1950	56.4	54.8
1946-50	14.3	101	9.3	1951	56.1	54.0
1951-55	11.2	75	5.0	1952	57.6	55.5
1956-60	9.5	63	3.6	1953	58.8	57.5
1961-65	8.4	54	2.6	1962-64	63.3	63.7
1966-70	7.9	51	1.7	1964	63.0	63.6
1971-75	8.2	46.6	1.2	1965	63.7	65.0
1976-80	6.9	39.1	0.8	1966	63.6	65.0
1980	6.2	34.4	0.9	1967	64.8	66.9
1982	6.1	29.9	-	1971	64.2	66.7
1983	6.1	27.4	-	1979	66.1	70.2
1984	6.5	23.1	-	1985	69.0	
1982-87	-	25.4	-	1988[a]	70.0	
1988	6.0	32.0	0.6			

Notes: a Refers to 1980-87

Sources: United Nations, 1976: Appendix 1;
Ministry of Health, 1984: 10;
Department of Census and Statistics, 1986b;
UNICEF, 1990: Tables 1, 5 and 7;
Department of Census and Statistics (1988): Table 6.1.

1.6 Causes of high mortality and mortality decline

The causes of the mortality decline have been much debated, but unfortunately most studies have been solely concerned with the contribution of malaria eradication. The most dramatic mortality decline in Sri Lanka coincided with a successful DDT campaign to control malaria, a severe problem in Sri Lanka's dry zone. The sections below, drawing on Meegama's work, discuss the causes of high mortality in Sri Lanka in the early twentieth century and then examine the contribution of various health services in reducing mortality in the preceding years.

The main reasons cited by Meegama (1986) for high mortality in the past were famines, epidemics, poor sanitation, lack of prenatal and postnatal care, improper feeding practices and malaria. Some of the problems were brought under control with the improvement of medical technology while others needed more structural changes such as those concerned with the economy.

Before we go into the details of Meegama's analysis I should point out that it is evident from Table 1.2 that mortality decline in Sri Lanka, partcularly after 1960, had been favourable for women. The maternal mortality level had already come down and female life expectancy had exceeded that of males. Langford and Storey (1993) have highlighted the impact of sex-selectivity in mortality in Sri Lanka. They show that from at least the first census in 1871 until recent years mortality was higher amongst females than males. This situation remains true in other parts of South Asia including North India, Bangladesh and Pakistan, where female status and autonomy are low, but is not true of South India where the status of women is comparatively high. Yet South India is part of the South Asian region which Sri Lanka, according to observers, most closely resembles (Yalman, 1971). Sri Lanka's higher female mortality seemingly

is contrary to the argument of Caldwell and Caldwell (1986), and of this thesis, that a major factor in the decline of mortality in Sri Lanka is Sri Lanka's comparatively high female status, a characteristic also referred to by Langford and Storey (1993: 265).

Langford and Storey (1993: 276) argue that Sri Lanka's high level of female mortality was due not to what they term a `culture against females', but to malaria and hookworm which combined to exacerbate anaemia. For women affected by menstruation and maternal depletion this could prove fatal. Sri Lanka suffered from very high levels of maternal mortality earlier this century: 2,100 per 100,000 live births in 1921 (Langford and Storey, 1993: 276), while hookworm and malaria were unusually prevalent, even in comparison to elsewhere in South Asia. On balance, Langford and Storey's argument seems convincing, though data discussed in Chapter 5 from the Sri Lanka Demographic Change Project suggest that there may be other factors. For example, breastfeeding was found to be of shorter duration for girls than for boys, even though other forms of treatment such as health behaviour did not appear to vary by sex.

1.6.1 Famine and malnutrition

Famines were a major cause of high mortality in Sri Lanka in the nineteenth century and Meegama (1986: 11) argued that the creation of a commercial economy which allowed the importation of food (see Table 1.3) helped overcome the problem of famine. He notes that

> the colonial transformation of Sri Lanka in the mid nineteenth century from a subsistence economy to one based on plantation crops for export had important effects on the health of the people... Foreign exchange earnings of the plantation industry made it possible for the country to import a stable and increasing supply of food.

Table 1.3 Selected food imports to Ceylon (Sri Lanka), 1870-1932 (cwt per million population)

Year	Rice	Potatoes	Dried fish	Sugar
1870-1872	1, 141, 060	3, 919	33, 959	6, 005
1880-1882	1, 234, 100	6, 399	33, 172	7, 772
1890-1892	-	11, 729	60, 775	19, 829
1900-1902	1, 488, 409	23, 920	77, 352	52, 223
1920-1922	1, 397, 194	22, 494	76, 195	95, 503
1930-1932	1, 685, 321	41, 832	75, 548	249, 859

Source: Meegama, 1986: 11, Table 11.

The potential nutritional problems associated with famines were largely reduced through the provision of imported food. However, Meegama noted that the lack of reliable vital statistics for the period means that it is not possible to estimate the precise contribution of the famines to mortality levels (Meegama, 1986: 10-11).

In the mid-twentieth century the government began a food subsidy program under which rice was distributed in the rice-deficit areas of the country. This program was extended to the other areas of the country and the ration was widened to include wheat flour and sugar (Gavan and Chandrasekera, 1979: 14-29). The food subsidy program was replaced by a food stamp scheme in 1979 (Edirisinghe, 1987: 9). What would have happened in the absence of food imports is essentially a matter of conjecture, but evidence of what could happen is provided by the consequences of the 1974 decision to halt food imports. There were widespread food shortages, especially in areas such as the estates where most people lacked access to land to grow their own food such as yams and jackfruit, leading to a reversal in the mortality decline that had been occurring for almost all the twentieth century (Tables 1.4 and 1.5).

Table 1.4 Comparison of age-specific mortality rates per 1000 population in the famine year (1974) and in a normal year (1973), the estate sector of Sri Lanka.

	Males			Females		
Age group	Normal year	Famine year	% increase	Normal year	Famine year	% increase
0-1	114.0	171.0	50	92.0	154.0	67
1-4	8.1	10.4	28	9.6	12.4	29
5-14	1.8	2.5	39	2.0	3.3	65
15-34	1.9	3.4	79	3.0	3.3	10
35-44	3.3	8.6	161	5.3	7.7	45
45-54	7.4	15.6	111	9.6	14.4	50
55-64	16.8	36.8	119	20.4	33.7	65
65+	130.8	258.6	98	148.5	241.0	62

Source: Meegama, 1982: Table 8.

Table 1.5 Neonatal and post-neonatal mortality per 1,000 live births in the estate sector and in the rest of Sri Lanka, 1972-1976.

	Neonatal mortality		Post-neonatal mortality	
Year	Estate sector	Rest of the country	Estate sector	Rest of the country
1972	67	25	30	17
1973	65	25	32	17
1974	69	19	86	23
1975	57	21	40	20
1976	60	22	41	17

Source: Meegama, 1986: 11, Table 10.

1.6.2 Cholera epidemics

Cholera was a major health problem in Sri Lanka before the 1880s but with the effective measures introduced by the colonial administration from that time, the prevalence of cholera was reduced dramatically (Table 1.6). The measures that reduced mortality from cholera were not only medical but included using the police to enforce the quarantine of infected people and to guard the infected areas and homes (Meegama, 1979 and 1986: 13-15). Such legal interventions were generally effective but on occasion could be counterproductive when people for fear of being placed in

quarantine camps fled to other areas as soon as they realized they had contracted the disease, thus spreading it (Meegama, 1986: 14).

Table 1.6 Cholera deaths in Sri Lanka, 1841-1950

Year	No. of cases	No.of deaths
1851-60	35,811	24,254
1881-90	3,868	2,452
1891-1900	6,127	3,765
1901-11	1,718	1,064
1912-20	1,104	763
1921-30	424	280
1931-40	94	79
1941-50	242	164

Source: Meegama, 1986: Table 14.

Whatever the problems encountered by the quarantine arrangements, quarantine was one of the major instruments that succeeded in controlling cholera: hospital treatment was of limited value as the essential treatment, rehydration, was not available in the early days. The gradual development of health services in Sri Lanka eventually brought cholera under control and it is no longer a major contributor to mortality (Meegama, 1986: 16).

The massive nature of the public health activities over a long period of time must have had the following effects: creation of public health infrastructure, including awareness and positive predisposition in a decentralized system; creation of popular expectations about public health activity, and a predisposition towards health seeking behaviour.

1.6.3 Poor sanitation

In nineteenth-century Europe and North America excessive mortality in urban areas was mainly due to insanitary conditions such as polluted water, the lack of toilets, seepage of excrement into wells, and the absence of an adequate and healthy water supply. These conditions affected young children much more than adults, leading to high levels of infant mortality.

This is reflected not only in the levels of mortality but also in the causes of death: smallpox, typhus, typhoid, cholera and scarlet fever, all resulting from poor sanitation (United Nations, 1973: 145).

Similarly, Meegama (1986:16-18) argued that poor sanitary conditions in Sri Lanka, especially in Colombo and the estates[1], led to the spread of various infectious diseases, such as dysentery, diarrhoea and typhoid, and consequently, to high death rates. Diarrhoeal diseases such as diarrhoea, dysentery and enteritis, and hookworm were the major infectious diseases that caused high death rates in the estates. Langford and Storey (1993: 275-278) argue that hookworm and malaria were major causes of female mortality. They note that before the control of these diseases female mortality exceeded male mortality, but with their control this situation was reversed.

With the growth of Colombo as a centre for shipping, trading and administration due to the import-export-based economy, the city became very crowded. The sanitary facilities, nevertheless, remained in a poor state both in Colombo and in the other crowded areas, the plantations. Most people did not have piped water and a proper sewage disposal system. The wells were very shallow and unprotected, and often temporary lavatories were built very close to the wells. The estate people had no lavatories and had to use the surrounding areas. Children often used the compounds and during the nights even adults did so. Consequently, domestic well water was often contaminated (Meegama, 1986: 16-19). A survey of water in Colombo in the period 1903-05 revealed that water in 77 per cent of the wells examined was unsuitable for human consumption (*Report on the Sanitation of Colombo,* 1907: 25 in Meegama, 1981: 150).

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1 `Estates' is the usual term in Sri Lanka for plantations where tea (coffee, rubber etc) is grown.

The provision of a proper sewage disposal system and piped water in the early twentieth century in Colombo was partly responsible for reducing mortality due to diarrhoeal diseases (Meegama, 1981: 147-148). Meegama argued that poor sanitation affected mortality rates in the estates. In the estate sector, it was only after the Indian government passed a law in 1922 requiring evidence of the provision of proper sanitary facilities on the estates for the recruitment of Indian labourers, that the planters gave much attention to sanitary conditions. Meegama (1986: 18-20) argued that improved facilities were responsible for reducing the estate crude death rate from 35.2 per 1000 in 1924 to 21.1 per 1000 in 1934. Table 1.7 shows crude death rates and the death rate from diarrhoea in Colombo, and the crude death rate and death rates from diarrhoea and hookworm in the estates for selected years.

Table 1.7 Death rate per 1000 from all diseases, diarrhoeal diseases, and hookworm on estates and Colombo

Colombo			Estates			
Year	CDR	Diarrhoeal diseases	Year	CDR	Diarrhoeal diseases	Hookworm
1901	32.3-35.2	6.5				
1911	30.9	5.1				
1921	28.8	3.4				
1924	-	-	1924	35.2	7.7	2.2
1925	-	-	1925	31.2	7.1	2.5
1930	-	-	1930	22.1	2.8	1.6
1931	18.9	2.2	1931	-	-	-
1935			1935	26.7	2.3	1.6
1940			1940	17.9	1.1	0.8
1941			1941	15.4	0.8	0.7

Note: Diarrhoeal diseases include diarrhoea, dysentery and enteritis.

Sources: Meegama, 1981: Table 5; 1986 Tables 19, 21, 25 and 26.

It appears that the provision of pure water and proper sewage disposal systems has reduced mortality, but Meegama's argument is based on the conditions prevailing in the city of Colombo and the estates. Much less attention has been given to sanitation in rural areas where most people lived: 80 per cent of Sri Lankans still live in rural areas. Even today, in

most areas of Sri Lanka, piped water is not available and the main source of water is wells. Similarly most areas in the country do not have a centralized sewerage system. According to the 1981 census, only 17.7 per cent of the households in the country had piped water and 33.5 per cent of the housing units did not have toilet facilities (Department of Census and Statistics, 1986a: 225-226), and very few would have been connected to sewerage pipes. Consequently, while improved sanitation may have been a factor in the mortality decline in rural areas it does not seem to have been the major factor.

1.6.4 Lack of prenatal and postnatal care, and infant and maternal mortality

As Meegama (1985) pointed out, improper birth practices adopted by traditional midwives during and after delivery were responsible for much of the infant mortality, particularly the neonatal mortality from tetanus, and maternal mortality due to sepsis in the nineteenth century. The Civil Medical Officer of the colony (Ceylon) reported in 1879 that infant deaths were very numerous because of neonatal tetanus, which resulted from the practices of traditional birth attendants:

> The excessive mortality among children is due to bad midwifery and the absence of medical assistance at hand in case of difficulty, imperfect tying of the umbilical cord of the child so that it not infrequently bleeds to death (Ceylon, 1879: 182 cited in Nadarajah, 1976: 138).

In 1906, in a survey of mortality patterns in the city of Colombo, the Registrar of the Ceylon Medical College observed that one important reason for infant mortality was tetanus neonatorum:

> The cause of this tetanus is due to infection of the navel after separation of the umbilical cord after birth. The infection is due to dirt and should therefore be preventable (Nadarajah, 1976: 138).

Meegama (1981: 146) noted that in the Colombo area, infant deaths due to neonatal tetanus were estimated at 57 per thousand live births in 1903. In 1927, 50 per cent of the maternal deaths in Colombo were from puerperal sepsis infection, which was usually a result of bad midwifery practices (Meegama, 1986: 23).

In the estate sector in 1924, the infant mortality rate was 247 per thousand live births and the maternal mortality rate was 18 per 1,000 live births, whereas, for the whole country in the same year, the infant mortality rate was 186 per thousand births and maternal mortality rate was 19 per 1,000. The higher death rates in the estates were due to the unhygienic conditions in which the babies were delivered (Meegama, 1986: 23-24). An Assistant Government Agent of Sri Lanka noted in 1936 that on estates,

> when the woman is delivered of a child, a dirty areca nut cutter is used for cutting the cord. The infant is laid on the floor uncovered and unattended until the midwife has attended to the mother (Meegama, 1969: 293).

Given the high rates of maternal mortality prevailing this was perhaps sensible.

Employment of trained midwives in the early twentieth century in Colombo municipal areas and in estates considerably reduced the infant and maternal mortality. The decline in maternal deaths corresponding with the introduction of trained midwives is shown in Table 1.8. Giving evidence from Colombo municipality where trained midwives were first employed in 1906, Meegama (1981) showed that infant mortality from neonatal tetanus declined from 40 per thousand in 1905 to 5 per thousand in 1915. By 1939, it had further declined to 0.5 per thousand live births. But despite this improvement in neonatal mortality, the overall infant mortality in Colombo dropped from 300 per 1000 births in 1905 only to 270 per 1000 in 1915. This relatively small decline in overall mortality was apparently related to

the poverty of the families and to continued high death rates later in the first year. The families in Colombo could not afford to breastfeed babies for very long because many of the mothers worked outside the house and had to replace breastmilk with `artificial' milk. Moreover, poor housing created conditions which encouraged infectious diseases (Meegama, 1986: 20-22).

Table 1.8 Number of midwives and maternal death rate in Sri Lanka, Colombo and the estates

Year	No. of midwives[a] in			Maternal death rate in		
	Sri Lanka	Colombo	Estates	Sri Lanka	Colombo	Estates
1926	-	-	-	19.0	-	-
1927	-	-	-	-	-	20.0
1928	-	-	-	19.2	-	19.5
1929	24	12	-	20.4	21.0	20.6
1930	39	12	93	21.2	23.7	22.9
1931	48	16	89	21.2	18.5	20.4
1932	72	19	82	20.8	16.2	17.2
1933	117	22	121	19.2	16.2	16.9
1934	271	28	170	14.3	20.7	17.9
1935	297	18	241	18.8	20.1	21.2
1936	447	22	283	21.1	12.7	17.0
1937	-	28	160	21.6	13.7	18.2
1938	-	28	170	19.9	12.3	16.2
1939	-	-	191	20.1	12.1	15.0
1940	-	-	241	18.2	12.1	13.7
1941	-	-	275	16.1	11.1	12.6
1942	-	-	283	15.3	8.4	8.7
1943	-	-	266	14.4	-	9.0
1944	-	-	239	13.3	-	8.8
1945	-	-	282	-	-	10.2
1946	-	-	275	-	-	10.8
1947	-	-	276	-	-	6.4
1948	-	-	277	-	-	6.8
1949	-	-	272	-	-	5.1

Notes: a Number of midwives in Sri Lanka is smaller on estates. De Silva (1956) refers to them as field midwives and this may mean that these figures do not include those who worked in hospitals.

Sources: Meegama, 1981: 147; 1986: 23,24; Peebles, 1982; De Silva, 1956: Table.

The practice of employing untrained midwives to conduct deliveries was discouraged by unexpected visits of the medical officer in charge of the Department of Maternal and Child Welfare to check the equipment which they were using. Whenever it was found that midwives were using scissors or knives in unhygienic condition they were threatened with prosecution

unless they obtained a new set of instruments available only for registered midwives. Yet the small numbers of midwives available meant that not all women could use the service of trained midwives. It was only after three maternity hospitals were opened in Colombo in 1935-36 that most women in the capital had the opportunity to use the services of trained midwives (Meegama, 1986: 22-23).

However, this facility was not available to women in rural areas where most of the population lived, and still live. Deliveries were conducted in their own homes by other women who had had children themselves. The situation was still as it was when Robert Knox (1981: 250) wrote about Sri Lanka in 1681: `they have no midwives, but the neighbouring good women come in and do that office'.

1.6.5 Improper infant feeding practices

One of the factors that affect the level of neonatal mortality is the care and attention given to the baby during the first few weeks of life. Since colostrum provides children with natural immunity to diseases it is important to breastfeed babies from birth. In the past, however, many mothers did not give colostrum to their babies because they thought early breastmilk was bad for the baby. Instead, the babies were fed with various herbal preparations which were likely to be infected in the process of preparation. The Medical Officer of Colombo commented in 1911 on infant feeding practices:

> ... there was a widely prevalent custom among Sinhalese, Tamils, Moors and Malays, whereby the new-born infant was given castor oil and sugar, or cow ghee and sugar, during the first three days... Children were not put to the breast during these three days, the secretion of the milk was thereby much interfered with (*Report of the M.O.H Colombo,* 1912: 52 cited in Nadarajah, 1976: 138).

An inspecting medical officer complained in 1929 that the treatment received by the estate women and infants received for the first three days after birth

> ... no nourishment beyond 4 cups of the nauseous decoction sweetened with `jaggary' and an occasional cup of coffee or thin rice cunji. Thereafter, the decoction was continued up to the 10th day with increasing quantities of food of little nutritional value.
>
> The infant is given a little powdered nutmeg obtained by grating it against the curry stone `to cut the phlegm' and with it disease-bearing germs are introduced into the infant's stomach, frequent doses of castor oil and sugar are further administered to irritate the intestinal tract of the infant who is kept away from the breast for 3 days...and it is no surprise to find a large number of the infants die of debility, and that mothers so enfeebled fall easy victims to septic infections (Ceylon, 1930: 27 cited in Meegama, 1986: 23).

Since many women did not receive any advice on proper feeding practices, they continued to follow tradition. Furthermore, many women were low-paid workers who could neither give up working after delivery nor afford to feed themselves with highly nutritious foods. Since the women could not give up work after delivery, they could not breastfeed babies for long and were forced to wean them early and to feed the babies with condensed milk, a tin of which was made to last four days without being stored properly in refrigerated or cold conditions. More infections may have been introduced to the babies in the process of preparing milk formula, because often when mothers were working it was an older sibling who looked after a baby. The inadequacy of the nutrition received by babies caused them `developmental diseases', a group which included deaths from congenital causes as well as premature birth, atelectasis[2], atrophy, debility and wasting diseases. Further, the use of unclean bottles and teats for feeding babies introduced infections. In order to improve the nutrition of

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[2] Atelectasis is the collapsed or airless state of the lung and can be acute or chronic. The primary cause is obstruction of the bronchus serving the affected area. In foetal atelectasis the lungs fail to expand at birth, a condition due to a variety of causes, one of which is prematurity *(Encyclopedia)*.

the babies, the needy families in Colombo were provided with free milk beginning in 1926 (Meegama, 1986: 22). By 1948, there were 3,500 centres distributing free milk in the country (Meegama, 1967: 213).

The provision of free milk to families and also to school children may have affected health both positively and negatively. On the positive side, the consumption of milk may have improved the health status of the children, provided that it was given to children rather than to the adult members of the family. Negatively, however, milk distribution may have introduced more infections during the process of transport and distribution. My own memory of the process of milk distribution in the 1960s is that a milkman brought milk to a house assigned by the Public Health Inspector, and then someone from that household would boil and distribute the milk. The village people would go to that house with their own container (a bottle, saucepan or a metal canister) and the children would be given their share of the milk at home. Their method of carrying milk can introduce infection and dust when the containers of milk are carried uncovered, mostly by young children. Especially when milk was given to the infants in bottles, if the bottles were not properly cleaned the milk might easily become contaminated. Contamination could also happen when unused milk was left in the bottle lying on the floor, and given to the child. Proper storage of food, especially milk foods that spoil easily, was, and still is, a problem because refrigerators were rare. Free milk received by my family was always boiled again and we were forbidden to drink milk at school as it caused diarrhoea.

1.6.6 Malaria

Malaria epidemics are seen by a number of writers such as Collumbine (1950), Newman (1965) and Abeyesundere (1976), as the major factors which contributed to high mortality in earlier centuries and the first

half of the twentieth century. However, except during occasional epidemics malaria mortality was generally fairly low. For example, while the malaria outbreak in the period 1935-37 increased the malaria death rate in 1935 to 84 per 10,000 population, in 1931, a normal year, the death rate from malaria was only 3.1 (Abeyesundere, 1976: Annex 4).

When malaria epidemics occurred, they caused high mortality in two ways: first, through the illness's direct effect and secondly, by lowering people's general health and resistance to other disease including most importantly diarrhoeal and respiratory diseases (Meegama, 1986: 24).

Malaria was a problem principally in the dry zone of Sri Lanka, where settlement was sparse largely as a result of malaria epidemics; where mosquitoes readily bred in the stagnant water of the irrigation canals and tanks, many of them abandoned, on which dry zone agriculture was dependent. However all of the dry zone districts' health problems cannot be attributed to malaria as they were also the areas where health facilities were most poorly equipped and understaffed. The available health centres tended to be located in urban areas, but most of the dry zone's inhabitants lived in remote villages. Since there were no plantations in dry zone districts there were few roads, which made it difficult for people to get to health centres (Meegama, 1986: 26-27).

Many scholars, including Collumbine (1950), Newman (1965) and Abeyesundere (1976), argue that the rapid mortality decline in Sri Lanka after 1945 was due to the control of malaria through the spraying of DDT. However, Sarkar (1957), Frederiksen (1961) and Meegama (1967) noted that other factors such as improved preventive and curative health services, economic and educational changes and political changes were also occurring at that time and they argue that these were equally or even more important. After all, at the time of the DDT campaign two-thirds of Sri

Lanka's population lived in the wet zone where malaria had never been a major factor.

The association of the malaria control campaign with the post-war mortality decline may be more apparent than real. Malaria control programs had been carried on in Sri Lanka since early in the twentieth century (*Annual General Report,* 1932: 9). The seeming success of the post-war campaign may have been partly related to the recovery from a malaria epidemic in 1946. Following a malaria epidemic the mortality rates would improve the following year. Thus, in 1946 death rates rose and in 1947 they dropped (Meegama, 1969: 289). These short-term fluctuations may have hidden more fundamental long-term developments.

Gray (1974: 226-228) calculated that malaria control in Sri Lanka was responsible for about 23 per cent of the overall mortality decline, though the proportion was much higher in the malarial areas. Following Sarkar, Meegama and Frederiksen, he argued that improvements in medical services, nutritional status and economic and social factors accounted for the remainder of the mortality decline.

A striking aspect of the debate over the comparative importance of the control of malaria as compared to the extension of medical services, is the very limited attention paid to Sri Lankans' own response to ill health, and changes in this brought about by education. I believe that understanding these is critical to understanding the remarkable mortality reductions that Sri Lanka has achieved. In his various works on the subject Meegama paid attention to cultural factors only to the extent that they delayed the acceptance of modern health services. Relying on primary evidence from old medical records, he attributed the poor health situation of the past to people's poor understanding of health practices and argued that this had been counteracted by the provision of modern health services.

There is no doubt that modern health services have played a critical role in mortality decline in Sri Lanka. The modern health system has directly affected mortality by controlling many diseases and spreading many health concepts, such as personal hygiene, sanitation, and immunization. Nevertheless, Sri Lanka's remarkable achievement in health has been due to the continuation of a well developed health service and willingness of Sri Lankans to use modern health services. The influence of pre-existing traditional medical concepts on the acceptance of a modern health system and the approach of individuals to health problems within the family, particularly mothers with regard to their children's health, are important factors that should be considered in an analysis of Sri Lanka's mortality decline.

Many Sri Lankans did not understand the theory of disease causation and treatment underlying the modern Western health system. Nevertheless, the modern health system was accepted partly because of its proven efficacy, and partly because the traditional system of medicine had taught people that illnesses can be cured. Under traditional medicine a variety of different treatments were available depending on the cause of the disease. If one treatment did not work it meant that the patient's relatives or the healer had misanalysed the cause of the disease and therefore the correct treatment. The solution was to try another treatment (Caldwell et al., 1989: 231-235). Even though most Sri Lankans did not understand the modern theory of disease causation they were willing to accept that it cured at least the symptoms of the disease. They could always later use a traditional treatment to cure the underlying cause of the disease.

An important reason why Sri Lankans accepted modern treatments is that their main traditional form of treatment, Ayurvedic medicine, was secular, not religious. Although some illnesses might have been caused by demons and needed exorcism, most had practical causes primarily relating

to the environment or food, and needed appropriate treatment. In this sense the health behaviour of Sri Lankans resembles primary health care.

The role of social change resulting from widespread education, social reforms and cultural changes on mortality has not been adequately discussed in the existing literature. There is increasing evidence that education has a major effect in lowering mortality levels (Ware, 1984; Hobcraft, McDonald and Rutstein, 1985; Caldwell, 1986, 1989; Caldwell and Caldwell (1985 and 1986); Cleland and van Ginneken, 1987 and 1989; Cleland, 1990), yet there is no record of how education in Sri Lanka directly or indirectly affected the mortality decline or the low mortality levels maintained thereafter.

1.7 Social change and mortality

While the DDT campaign was under way other developments affecting health were also occurring. By this time there had been many social changes in Sri Lanka. In 1931 universal franchise was granted and for the first time some of the local members of parliament were given some authority. These local members demanded that health services be provided for the areas where there were no, or inadequate, facilities, especially the rural areas of the dry zone districts (Meegama, 1967: 290-293). There was a considerable expansion in the number of health facilities in the country, which was particularly rapid in the 1950s (see Table 1.9), but the increase was for a long time unequally distributed among the districts.

Table 1.9 Development of Health Facilities in Sri Lanka, 1926-1981

	Hospitals		Hospital beds		Doctors				
	Number	per 100,000 people	Number	per 100,000 people	Number	per 100,000 people	AMPs[a]	Nurses	Mid wives
1926	98	1.77	8 089	145.9	285	5.1	380	437	956
1930	112	1.96	9 477	165.9	341	6.0	409	605	1,564
1935	112	1.90	11 893	201.7	339	5.7	416	618	1,575
1940	126	2.05	- -	- -	404	6.6	469	744	- -
1945	153	2.30	15 650	235.3	514	7.7	548	- -	3,101
1950	263	3.43	19 959	260.0	674	8.8	676	1,165	3,940
1955	274	3.14	24 312	278.7	952	10.9	990	2,210	5,426
1960	289	2.92	29 816	301.3	1,173	11.9	1,107	3,232	8,120
1965	296	2.60	33 802	304.9	1,494	13.4	1,244	3,642	6,993
1970	328	2.66	37 753	305.9	1,932	15.7	1,225	5,542	6,531
1975	458	3.39	40 761	302.2	2,138	15.8	1,075	5,695	5,339
1977	467	3.35	41 537	297.9	2,129	15.3	1,015	5,640	5,058
1981	391[b]	- -	42 251	- -	2,035	- -	844	6,931	- -

Notes: a Assistant medical practitioner
b excludes maternity hospitals

Sources: Peebles, 1982: 54-57.
Gunatilleke, 1985: 121.

Education facilities have been available in Sri Lanka for both girls and boys since the early nineteenth century. In 1900 there were 3,917 schools with 208,274 students (Arunachalam, 1902: 127). The level of literacy (defined as the ability to read and write any language) has steadily increased over time with especially rapid growth for females (Table 1.10). Even before universal free education was introduced there were free government schools teaching in the vernacular languages, allowing even poor families to send their children to schools (*Annual General Report,* 1933: 48). The increasing levels of education for both men and women in Sri Lanka has, I believe, had an important impact on reducing mortality levels. I examine in this thesis the influence of social and cultural factors on the present health status of the Sri Lankan people.

Table 1.10 Progress in adult literacy in Sri Lanka, 1871-1981

Year	Percentage literate	
	Male	Female
1871	23.1	2.0
1881	29.8	3.1
1891	36.1	5.3
1901	42.0	8.5
1911	43.3	11.7
1921	54.4	21.2
1931	62.0	30.2
1946	70.1	43.8
1947	70.7	44.7
1959	78.0	58.0
1963	79.3	63.2
1971	85.6	70.9
1981	90.5	82.4
1985	91.0	83.0

Sources: Sumathipala, 1968.
Gunatilleke, 1985: Table 2.
UNICEF, 1990: Table 4.

1.8 Health, disease, and illness : a definition

This thesis is examining the behaviour of ordinary people with regard to health. It is necessary to recognize, however, that people in different cultures may not just have different explanations of ill-health, they may define being healthy or unhealthy in very different ways from medical professionals. For this study this is a critical point, for whether people define themselves (or others) as healthy or ill will help determine their subsequent health behaviour.

Most writers on health have a background in the health profession, and tend to see health in biomedical terms. Long (1984: 1-3) argues that the medical profession defines ill-health essentially as the breakdown of a person's normal biological functioning. The medical professional's job is to fix that breakdown, that is to cure the disease. This approach emphasizes the importance of the medical profession in treating illness. However, as Dingwell (1976 cited in Long, 1984: 13) points out, this is not how most non-medical professionals define illness and it consequently tells us little about

how lay people cope with illness. Yet unless an individual perceives himself as being ill and needing treatment he will not be seen by medical professionals.

Long (1984: 25-26) argues that health as popularly conceived consists much more of a continuum between being very healthy and being very unhealthy (or even dead), and he implies that this popular understanding of health is much closer to reality, taking into account that health is really the sum result of our total behaviour and the social and economic context within which we live. This concept of health has much in common with indigenous concepts of health in Sri Lanka, as well as elsewhere in Asia. As is examined in Chapter 2, Sri Lanka's indigenous Ayurvedic health system held that a person's degree of health depended on how `well-balanced' their bodily system was, a concept that implies degrees of well-being.

The distinction between medical and lay concepts of health has been elaborated by Susser (1974) who distinguishes three dimensions of ill-health: disease, illness and sickness. Disease refers to a physiological disorder such as malaria, malnutrition and bronchitis, and is defined by the medical profession. Illness is how the individual perceives and experiences ill-health. Sickness is defined by the expectations of the society; in some cases, of the mentally handicapped, for example, there is no apparent disease and the individual may not regard himself or herself as being ill, but the society may label the person as sick. While these three levels of health are conceptually independent of each other they can also interact. For example, once a person has been identified by a medical professional as having a disease the society may label him as sick and in the case of heart attack all three concepts coincide (Susser, 1974).

By emphasizing the importance of individual and societal concepts of health, Susser's framework draws attention to the importance of the way

health is understood in different cultures and different economic groups. These should be taken into account when studying the health of a population.

Illsley (1980) similarly states that health is a social concept which is defined and perceived differently by different social groups, and which has different meanings to patients, and practitioners. These meanings change as the society changes and so does health related behaviour.

It is not simply that definitions of health and disease differ between medical professionals and lay people; they also differ between lay people in different societies, and sometimes within them. In rural Kenya, some diseases are classified according to cause: whether they are caused by God, forefathers, witchcraft, or self; other diseases are classified according to who treats them: a herbalist, a traditional midwife, a medico-religious specialist, self-treatment, or hospital (Van Luijk, 1984: 283-291). Marr (1987: 164) found that in Vietnam `disease was defined as the impairment of the overall balance between external and internal, physical and moral forces'. Messing (1970: 335) found that in Ethiopia diseases are usually classified according to the perceived actions of evil spirits. In Malaysia, according to Heggenhougen (1980), there are two groups of diseases: those that have a physical cause and those that have a supernatural cause.

Just as concepts of disease vary so too do the signs that are regarded as symptoms of disease (Lieban 1977: 21). For example, skin conditions considered normal by the Amazonian Indians are regarded by the Mano of Africa to be yaws. Egyptian villagers believe that illness must be associated with pain; parasitic infections which do not cause pain are therefore not considered to be illnesses requiring treatment (Read, 1966).

Sri Lanka is very striking example of a situation where the understanding of lay people of disease and illness differs fundamentally

from that on which Western medicine is based. In Sri Lanka, Obeyesekere (1976: 201-202) notes that when any of the three humours — wind, bile and phlegm — appears to be in excessive quantity, it is regarded as a sign of illness. The distinction between the concepts of health and disease held by lay people and by Sri Lankan medical professionals can never be sharp in that Sri Lankan medical professionals are influenced by the lay views with which they grew up, and lay concepts are influenced by the introduced concepts. Nevertheless, a dichotomy persists, in part because of a hierarchical relationship between doctor and patient. While there is a widespread acceptance of the efficacy of Western medicine by lay people, there is very limited communication. Doctors do not believe that their patients will, or need to, understand Western medical concepts and do not attempt to explain illness. This acts to perpetuate the gulf between indigenous and imported concepts of disease and treatment. However, this has not been detrimental to Sri Lankan health because indigenous Sri Lankan concepts of treatment have stressed the practical efficacy of treatment.

In contrast to the claimed objectivity of Western medicine there can be no hard and fast definitions of health in terms of popular concepts: health is a very subjective concept. For this reason societies which have low mortality may record high levels of morbidity in social surveys precisely because people are alert to the dangers of disease. Few lay people regard someone as being either absolutely healthy or ill, people are in-between though they may tend towards one extreme or the other.

1.9 Objectives of the study

The overall goal of this study is to examine contemporary health behaviour (curative and preventive) among the three major ethnic communities: Sinhalese, Muslims (Moors) and Tamils, of Sri Lanka and its

impact on the health status of Sri Lankans. To fulfil the study's goal, I have six major objectives:

1. To investigate the types of health treatment that people use in Sri Lanka and the reasons for their choice. Specifically to examine (a) Whether their socio-cultural conditions (ethnicity, religion, education, residence) affect the type of treatment used; (b) Whether demographic factors (age, sex) affect choice of treatment; (c) Whether other factors like distance to services (accessibility), cost and doctor-patient relationship affect choice of treatment.

2. To ascertain the cultural determinants of the use of a particular health treatment and to what degree treatment is conditioned by theories of disease causation.

3. To find out why people use different types of treatment for the same illness and the degree to which people are willing to experiment with new treatments.

4. To examine the reproductive and preventive health behaviour affecting the health status of women and their offspring.

5. To describe and explain how aspects of Sri Lankans' reproductive and preventive health behaviour have changed since the 1930s.

6. To evaluate to what degree Sri Lanka's low mortality can be explained by the approach of Sri Lankans to the prevention and treatment of illness.

1.10 Organization of the study

The rest of the chapters in the thesis have been organized in the following way. Chapter 2 discusses the health systems of Sri Lanka, the modern and the traditional ones, and Sri Lankans' health concepts and behaviour. Chapter 3 considers the data used for analysis and the methods of data collection. Chapters 4 to 6 are analytical chapters: Chapter 4 looks at curative health behaviour and stages in health decision-making regarding the use of curative health services. Chapter 5 compares the preventive health care behaviour relating to mothers and children in my survey data with similar information from the Sri Lankan Demographic and

Health Survey (SLDHS). Chapter 6 examines the changes that have occurred in health behaviour over 50 years. Chapter 7 sums up the findings and draws some conclusions based on these findings.

Chapter 2

Present health services in Sri Lanka

2.1 Introduction

Sri Lanka, like many developing societies, has a well established plural medical system: indigenous or traditional health services exist side-by-side with modern or Western health services. A Western medical facility is available, on average, within three miles of one's house while an indigenous facility is accessible within 0.8 mile (People's Bank, 1980: 4). Both services are extensively used by Sri Lankans and there is little sign that modern medical services are replacing the traditional services even though the society is rapidly modernizing. Sri Lanka's modernization is indicated by such indices as its high levels of literacy, notably for women (83 percent), a high level of female employment (in 1990, 37 percent of Sri Lanka's workforce is females) in the formal sector and high proportion of the workforce working outside agriculture (Population Division). Given the extensive modern health facilities throughout the country providing services free of charge, it is surprising that many people still resort to indigenous health services, often paying large sums of money. The extent to which the various types of health services are used in Sri Lanka, however, is dealt with in later chapters. The primary objective of this chapter is to explore the various health care options available in Sri Lanka rather than their relative utilization. To do this it is necessary to first describe the various agents that are regarded as causing illness.

2.2 Sri Lanka's health care system

The health care options available in Sri Lanka can be broadly classified into two: traditional, and modern or Western medicine. The traditional medical system in itself forms two distinct healing systems:

natural and supernatural. The natural system includes a medical system indigenous to Sri Lanka known as *deshiya chikitsa,* and Ayurveda which was introduced from India. The Tamil and Muslim equivalents to Ayurvedic medicine, Siddha and Unani respectively, are also practised among those communities. An average person makes little distinction between these various types: all are generally referred to as Ayurveda. The supernatural types of care include a number of magico-ritual performances: *thovil* (exorcism) to ward off devils who cause illness and against black magic which causes illnesses; *yantra*[1] and *mantra*; lime cutting; charmed oil and water; making vows to the Buddha or gods and promising *pujawa* (offerings) or alms to monks, nursing mothers, beggars and so on for the prevention and cure of illness caused by various deities (often infectious diseases) and planetary influences; and performing *seth santi* (appeasement) against attacks of black magic (Obeyesekere, 1963; Noten, 1985: 105-108). The meaning and significance of various ceremonies are discussed in section 2.6.

2.3 Development of the natural health system in Sri Lanka

Sri Lankan history records that indigenous systems of medicine were well developed in Sri Lanka by the fourth century BC. Medicine was, at first, practised by individual physicians but later, under the royal patronage, expanded into an organized system with a network of institutions and establishments to provide services to the people. During periods of foreign dominance the traditional systems of medicine were neglected; nevertheless many of these traditions have been passed down from generation to generation. The *deshiya chikitsa,* commonly known to Sri Lankans as *parampara vedakama,* was never written down, but has been handed down as folklore from father to son, often being guarded as a

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1 *Yantra* means an incantation written on a piece of paper or a sheet of copper, folded up and worn as a talisman.

special preserve of the family. For this reason, practitioners of *deshiya chikitsa* tend to be highly specialized in certain fields, such as ophthalmology, the treatment of boils and carbuncles, snake poison, hydrophobia, a system similar to acupuncture, the treatment of fractures, and the treatment of burns (People's Bank, 1980: 4-5). In addition to herbal treatments, various magico-religious performances such as *bali* (offerings), lime cutting, and the appeasement of gods and devils were also combined in *deshiya chikitsa*, particularly in the treatment of patients with mental afflictions.

Practitioners of *deshiya chikitsa* had no formal training but learnt their profession by years of apprenticeship under a master physician, very often the father. In recent times, however, efforts have been made by the Sri Lankan Government, with the help of the indigenous physicians, to compile the prescriptions and to provide formal training to these physicians (People's Bank, 1980: 4-5). In contemporary Sri Lanka Ayurveda has virtually absorbed the *deshiya chikitsa* system of medicine. Anyone who practises herbal medicine, even if without formal training, is referred to as an Ayurvedic practitioner (Nordstrom, 1988: 480). Therefore, in this chapter Ayurvedic concepts of health are discussed together with *deshiya chikitsa*.

Ayurveda is the ancient Indian system of medicine, but in Sri Lanka, Ayurveda as it is practised today includes the *deshiya chikitsa*, Siddha and Unani systems of medicine (Perera, 1985: 4). The word Ayurveda is derived from two Sanskrit words: *ayur* meaning life and *veda* meaning science or knowledge, that is 'Science of Life' (Kurup, 1983: 50). The Ayurvedic system developed in India about 3,000 years ago. Siddha, the Tamil equivalent of Ayurveda, also originated in India (Kurup, 1983: 58), and is popular among the Tamil-speaking people in Sri Lanka. The Unani system, which is practised by Muslims, originated with the Greeks and was later developed

by the Arabs (Said, 1983: 61). It is based on the teaching of Galen and Unani is a corruption of `Ionian' after the Ionian Coast of Asia Minor where Galen was born. The Unani system, which was brought to Sri Lanka by Arab traders, has similarities with Ayurveda and Siddha medicine. In Sri Lanka Ayurvedic medicine is practised in all three forms: Ayurveda, Siddha and Unani. Although these systems are used by different people, as practised in Sri Lanka all three are based on the concept of humours, for example, in Ayurveda *tridosa* (Wanninayaka, 1982: 1-5). The concepts of *tridosa* and humour are discussed in Section 2.5.

Formal training in Ayurveda began in 1929 with the establishment of the College of Indigenous Medicine in Colombo which became a government institution in 1941 (People's Bank, 1980: 5) and this institution is the only one that provides training for all three systems of Ayurveda mentioned above (Wanninayaka, 1982: 25). This institution was affiliated to the University of Sri Lanka in 1977 and provides five years of systematic education to 150 students a year (Wanninayaka, 1982: 26; Zaman, 1983: 238). The popularity of Ayurveda led to a declaration of the Indigenous Medicine Ordinance of 1941, the aim of which was to incorporate the Board of Indigenous Medicine, the College of Indigenous Medicine and the Hospital of Indigenous Medicine as government institutions. Further recognition for Ayurveda occurred with the promulgation of the Ayurveda Act No. 31 of 1961. Under this Act, a Department of Ayurveda was established under the Ministry of Health (Stepan, 1983: 304). The Act also made provision for registering Ayurvedic physicians, nurses and pharmacists. In addition, an Ayurveda Medical Council, Ayurveda College and Hospital Board, and the Ayurveda Research Committee were established (People's Bank, 1980: 5).

The Government College of Ayurveda (subsequently the Institute of Ayurveda of the University of Sri Lanka) is the main recognized training centre for indigenous physicians. Those who complete their five years of training are required to undergo another year of internship in an Ayurvedic Hospital to be eligible for registering with the Ayurvedic Medical Council. The Siddhayurveda College in Gampaha which receives some financial assistance from the government, also offers similar training for a duration of five years. Apart from these two colleges there are various other colleges that train indigenous physicians but are yet to be recognized by the Ayurvedic Medical Council: for example, the College of All-Ceylon Traditional (Ayurveda) Medicine providing mainly training in *deshiya chikitsa,* Pratiraja Ayurveda Medical College in Agalawatta and Lanka Siddhayurveda College in Jaffna. The first two institutions receive some monetary support from the government , so provide free tuition for their students. The College in Jaffna does not receive any financial support from the government, therefore the students have to pay for tuition (Wanninayaka, 1982: 25-31).

Those students who study in colleges that are not recognized by the Ayurvedic Medical Council can sit for the examinations held by Ayurveda Education and the Hospital Board. Successful candidates are granted diplomas in Ayurveda and can be registered with the Ayurvedic Medical Council as practitioners.

Physicians of *deshiya chikitsa* also train their students, often their children, in the trade. Since *deshiya chikitsa* has not been well documented, the students are required to spend long years in apprenticeship before becoming physicians. In 1971 traditional Ayurvedic practitioners who satisfied criteria specified by the Ayurvedic Medical Council were allowed to be registered as practitioners in the Ayurvedic Medical Council. To be eligible to be registered they had to be 23 years of age or over and have

served a period of 10 years as an apprentice under a registered physician, or five years apprenticeship and passed a written examination conducted by the Ayurvedic Medical Council. Those who satisfied these criteria had to attend an oral test held by the Ayurvedic Medical Council and had to demonstrate their knowledge of the basic principles of Ayurveda, pathology and *materia medica*. There are, however, a large number of physicians practising traditional medicine who are not registered with the Council (People's Bank, 1980: 5; Wanninayaka, 1982: 35-37).

An Ayurvedic research institute which is responsible for clinical, literary and drugs research was established in 1962. There are 11 Ayurvedic hospitals which provide in and out-patient services. The Department of Ayurveda grants financial assistance to local authorities to provide free services through Ayurvedic dispensaries (People's Bank, 1980: 5) which totalled 233 in 1982 (Wanninayaka, 1982: 71).

Ayurvedic Pharmacies Regulations, 1973 laid down detailed hygienic and other standards to be maintained by the Ayurvedic pharmacists. The importance of Ayurveda in Sri Lanka and the government's role in enhancing it was further expressed by the creation of a separate ministry in 1980 known as the Ministry of Indigenous Medicine (Stepan, 1983: 304-305).

2.5 Natural healing system: the theory of disease causation

According to Ayurvedic theory, the human body consists of three *dosas* or humours, seven *dhatus* or basic tissues, and three *malas* or excretions. All must be in the right balance, otherwise illness results. The three humours, *vata* or wind, *pita* or bile, and *sema* or phlegm have a special importance since their disequilibrium is the cause of disease (Obeyesekere, 1977: 201-202; Wanninayaka, 1982: 3; Wirz, 1954: 8). Diseases caused by excessive wind in the body include rheumatism, pains in joints and muscles

and varicose veins. Too much bile in the body leads to internal disorders of the intestines and stomach and to skin disease. Excessive phlegm causes asthma, hay fever, colds, catarrh and tonsillitis (Noten, 1985: 93; Wirz, 1954: 8). Siddha medicine shares the same concept of disease causation as Ayurveda (Kurup, 1983: 58). The Unani system is based on the belief that there are four humours in the body: blood, phlegm, yellow and black bile, and that disturbances to their harmony cause illness (Said, 1983: 61-62).

The primary agent that upsets the balance between the humours is food; all three humours are very sensitive to food. In Sri Lankan society people distinguish food as either `hot' or `cold': these do not refer to temperature, but are a cultural classification of the effect of such food on the body. Examples of hot foods are tomatoes, some meats (e.g. beef and wild boar), breadfruit, tuna and pineapple; examples of cold foods are milk, sago, spinach, orange, eggplant and cucumber. Too much hot food causes excessive bile, wind and *dhatu* loss, which is loss of semen through indulging in sexual activities, known as *prameha roga;* too much cold food causes illnesses related to an excess of phlegm (Noten, 1985: 93-94; Obeyesekere, 1977: 203-208). *Prameha roga* is of major importance in Sinhalese culture because semen is seen as the source of vitality for both men and women. *Dhatu* loss is believed to be a cause of several illnesses (Obeyesekere, 1975a: 423; Sachs and Tomson, 1992: 309).

2.5.1 Cure for the diseases of three humours

Noten (1985: 95-96) noted in her research area in the dry zone of Sri Lanka that, if people think they have illnesses caused by an imbalance of the three humours, they initially try to cure themselves by using herbs available in their gardens or which can be bought in shops. If the illness is serious, a local Ayurvedic practitioner is consulted. Ayurvedic practitioners who are not registered in the Ayurvedic Medical Council, having identified

the illness, treat the patients using various forms of herbal preparations and some use a combination of herbal and magico-religious treatment. Ayurvedic practitioners who are trained in the government Ayurveda Medical College use stethoscopes to diagnose illness and treatment consists of herbal and Western drugs including antibiotics (Nordstrom, 1988).

Regulating the diet plays an important part in treatment as well as in prevention. When the patient is thought to be suffering from a `hot' illness, a `cold' diet may be given and for someone with a cold illness, hot food may be given (Wandel, Gunawardena, Oshaug and Wandel, 1984: 101). The treatment from an indigenous healer also consists of medicine with the opposite quality. For example, mental illnesses are thought to be caused by too much heat in the head and herbal poultices are applied to cool the head. Oils are also applied for the same purpose. Catarrh is a very common complaint that is regarded as caused by excessive cold and thus treatment is given to expel excess phlegm (Obeyesekere, 1976).

2.6 Supernatural agents as causes of illness

A number of illnesses are believed to be caused by supernatural agents. These supernatural agents include gods, devils, ghosts, planets, witchcraft, evil eye, and evil mouth (Noten, 1985: 97-98). All these supernatural beings affect people who have bad *karma*[2] or are suffering from the malign influence of planets[3] (Gombrich, 1971). Diseases caused by

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2 `Karma' is the result of actions undertaken in this life or previous lives. Bad actions will invoke retribution, if not in this life, then in subsequent lives.

3 According to ancient Indian doctrines, the various parts of the body and its organs are subject to the influence of nine planets (five planets of the solar system and the moon, the sun, the dragon's head, and the dragon's tail) and each of these is thought to represent a deity. The influence each planet exerts on the human organism can be either good or bad, either beneficial or injurious. Each planet controls a particular part or an organ of the body so it can easily develop into a dangerous cause of ill-health (Wirz, 1954: 114-115). In Sri Lanka a horoscope is made for everyone at birth and according to the time of birth the planetary alignment is noted. During the course of life the planets will change their positions in the horoscope thus bringing good or bad fortune. Persons subject to bad planetary influence are in a weak state and they are

angered gods are mainly infectious diseases such as chickenpox, smallpox, measles and mumps. The gods do not cause the disease directly but rather by causing excessive heat in the body which leads to the illness. In parts of Sri Lanka, Buddhists and Hindus believe that the goddess Pattini causes such diseases. When the goddess is angered (*deva kopa*) by people's wrongdoing, she creates drought. The excessive heat in the earth, brought about by the drought, increases an individual's body heat and thus illness occurs. Since these diseases are due to both natural and supernatural causes, treatments are carried out for both causes. Moreover, since the anger of gods is directed towards both individuals and the community as a whole, communal rituals are carried out to please the responsible deities thus preventing the recurrence of the illness and curing it (Obeyesekere, 1969b: 123-124; Obeyesekere, 1976: 202-203).

Sri Lankans believe that disease can also be caused by devils. The Sinhalese believe that women are vulnerable to spiritual possession at puberty, during menstruation and just after childbirth. Girls are not allowed to eat any food cooked in oil for three months after menarche or during their menstrual periods. At the onset of puberty, girls are kept inside the house away from all men for a few days: the length of time depends on the day an astrologer decides from the girl's horoscope that the girl can come out. They should not go out on their own for three months after menarche, but, if they do, they should carry something made of metal, such as a pocket knife or a key, with them. They are not permitted to go out at all at particular times of the day: midday and nightfall. The young girl's behaviour affects whether she becomes a good mother later on. If a girl has not obeyed the rules and has been spiritually influenced she will be afflicted

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likely to face illness and other calamities. To combat or to minimize the bad effect of planets, rituals are performed.

by *doshas* or troubles such as pains during menstruation, irregular menstruation and miscarriages at the time of childbearing.

Pregnant women are similarly looked after, because women are particularly subject to diseases caused by devils during pregnancy, childbirth and menstruation: miscarriages, difficult childbirths and after childbirth *vedugei sanniya* (shivering at confinement). In Noten's Sri Lankan study village, most people believed *sanniya* was caused by devils while a minority believed that it was due to natural causes such as exposure to cooling food (Noten, 1985: 103-104). Menstrual disorders can be caused by spiritual possession, when women have taken unsuitable food at the wrong times (Wirz,1954; Obeyesekere, 1969a). Foods cooked in oil are particularly unsuitable, and if women eat them while menstruating, devils can easily possess them. It is for this reason that girls are kept indoors during menarche, with only limited types of food. Fried foods and meat are specially avoided by the Sinhalese during the onset of puberty and during subsequent periods. Women who go out alone at midday or at dusk, particularly to wells or other places where they fetch water or wash, are prone to possession by devils who cause pains and other disorders.

Dead ancestors are reborn as *preta* (ghosts) who haunt houses and frighten people. Ghosts cause disorders such as giddiness, headaches, delirium, shocks and nightmares (Wirz, 1954:186) which subsequently result in fever and the victims becoming delirious and talking nonsense.

The concept of evil eye *(esvaha)* and evil mouth *(katavaha)* is not natural but neither is it strictly religious. Evil eye means an envious glance from someone with innate powers, often unrecognized even by themselves (De Munck, 1992); evil mouth occurs when somebody compliments a person's physical capabilities, appearances and achievements thus causing danger. Evil mouth primarily affects young children, but it sometimes

affects adults and even domestic animals and crops. If a person remarks on a child's appearance, it is believed that the child may get blisters all over the body. The blisters eventually break and a watery substance with a bad odour comes out. The blisters' black colour and their odour indicate the influence of evil eye and evil mouth. The blisters eventually develop into a rash or sore. The two concepts of evil eye and evil mouth normally go together in Sri Lanka and people often have a view as to which people have such powers.

Apart from these sources of illness, people can fall sick through sorcery and witchcraft by enemies, and also when their planets are badly positioned. People can determine the effect on them of supernatural beings by visiting a fortune teller or an astrologer (Kapferer, 1983).

2.6.1 Tackling the supernatural agents

When the cause of the disease is seen as supernatural, it is treated by ritual or magico-religious types of cures. In the Sri Lanka Demographic Change Survey[4] (SLDCP) we came across a number of different rituals practised for such illness: exorcism, yantra, mantra, charmed string, oil or water, cutting limes, *bodhi puja* (offerings at a buddhist temple), making vows promising to give alms, objects or even money, services by a priest, visiting palm readers or horoscope readers, and burning spice mixtures.

When a patient with an infectious disease is identified, young coconut leaves, mango leaves or *margosa* leaves are hung in the doorway so that the neighbours know someone is sick and the visitors will not place the household at additional risk by polluting the residents. Women who are menstruating or have had a birth recently, in particular, should not visit the house. People who have attended a funeral must not enter before

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4 The SLDCP is the major source of data used in the thesis. It is described in Chapter 3.

showering. The treatment for infectious disease is to make vows to Lord Buddha or to the goddess Pattini, promising to give alms to seven nursing mothers when the patient has recovered (Gombrich, 1971). The recovery needs a duration of 7, 14 or 21 days of resting according to the disease. It is only then that a patient can shower and at this time particular care is taken to keep the healthy family members away as people believe it is during this time the patient becomes highly infectious. During the time of illness the patients are also given home remedies: blue powder and lime juice, elephant jawbone and lime juice, and *margosa* leaves and turmeric for mumps. I myself was treated for mumps with the application to my face of an elephant's jawbone which had been ground with lime juice. Coriander water and a herb called *vishnukranthiya* are used for measles, and *margosa* leaves for smallpox and chickenpox. When the patient has recovered at the end of the compulsory period of resting and seclusion, the promise to give alms to nursing mothers is fulfilled. The treatment for illnesses caused by supernatural agents does not only involve ritual, for people often use herbal remedies, and special food as well. This, as discussed earlier, is because of the belief that supernatural agents cause illness by disturbing the bodily balance: for example, an angered god may arouse heat in the body which causes illnesses such as chickenpox. These practices have been characterized by Obeyesekere (1969b) as being based on `a small theory of illness within a larger theory'.

Disorders due to evil eye and evil mouth can be prevented or cured by performing simple rituals at home: burning salt, chilli pods, mustard seed, and cooked rice on a fire set up in an old earthenware pot and leaving the pot with ashes at a T-junction of two roads. There are now already mixed packets of the necessary ingredients which can be bought in Sri Lankan shops. For young children, a black spot is kept on the forehead so that the

child will be too ugly to admire. Lightly spitting towards the child is also done to avoid the effect of evil eye and evil mouth.

A ritual involving charmed water, oil and string, usually performed by a Buddhist monk or a *kattadiya* (priest who performs rituals), is commonly used to cure the disorders caused by evil eye and evil mouth, and for the casting out of devils. The patient has to drink the charmed water and the oil is applied to the body. Placing a *yantra* round the neck, making vows to God or gods and promising offerings to Buddha or to the gods are also practised for the same type of illnesses.

It is hard to separate the supernatural healing from non-registered Ayurvedic healing as they are interrelated. Often the Ayurvedic healers perform rituals before undertaking herbal treatments. According to Obeyesekere (1976: 205), supernatural concepts were once a subdiscipline of Ayurveda, although contemporary registered Ayurvedic practitioners do not commonly practise such rituals. However, there are many exorcists and priests who do so as a full-time occupation. Even Buddhist monks perform some rituals such as blessing water or oil and cutting limes to prevent evil eye and evil mouth.

2.7 The development of modern health facilities

Western medicine was introduced to Sri Lanka by the Portuguese in the sixteenth century but the modern system that exists today is mostly the product of the last 50 or 60 years (Perera, 1985: 99). Modern health facilities in Sri Lanka go back as far as the 1850s when the Civil Medical Department was established. In 1870, the government began the Professional Medical Training Programme, which trained medical officers and apothecaries; the Bacteriological Institute was established in 1899. In this regard Sri Lanka was advanced by the standards of the developing world, and indeed not far behind the developments in medicine occurring in

Europe. This advancement was, in part, a reflection of the wealth brought by Sri Lanka's plantations. The most important actions in the pre-World War I period were the introduction of inoculation and vaccination against smallpox in 1897, and quarantine arrangements for infected visitors, especially those who came from India. However, these activities had no marked impact on mortality up to World War I and, at the end of that war, death rates soared because of the worldwide influenza epidemic (see Appendix 2.1). In the first quarter of the twentieth century a campaign against hookworm was launched in collaboration with the Rockefeller Foundation: this may be viewed as the beginning of an effective program to reduce mortality. This campaign led to the creation of the first health unit at Kalutara, south of Colombo, in 1926 and health units were later established in other areas. They provided health education, school health work, maternity and child health care, sanitation and control of infectious diseases (Nadarajah, 1976: 131).

The 78 hospitals established by 1920 emphasized maternal and child health. Maternity wards were included in all district hospitals, where mothers were encouraged to have their babies. In 1931, the introduction of political reforms, including universal adult franchise and a degree of political responsibility for local parliamentary members in making decisions on domestic matters, had a significant effect on expanding health services. By 1945, health care work had become an integral part of the government's total welfare program and free medical services had been introduced to most parts of the country (Perera, 1985: 99).

Preventive health measures were introduced in the 1920s with the introduction of antenatal clinics, immunization against communicable diseases and improved sanitation. An important step in providing preventive health care was the establishment of a Health Unit in 1926 which undertook the training of field midwives and public health inspectors.

In the same year the curative and preventive services were brought together under one administration (Perera, 1985: 99-100).

During the two decades 1945-65, the number of medical care facilities exceeded demand (Perera, 1985: 100) but the expansion of services after 1970 was much slower (see Table 2.1 on the growth of the Western health system in Sri Lanka). The numbers of people per hospital, and assistant medical practitioners (AMP), have indeed been growing since 1970.

Table 2.1 Growth of Western medical system in Sri Lanka, 1945-1990

Health facility	**Year** 1945	1950	1970	1975	1980	1981	1983	1985	1990
No. of hospitals[a]	191	362	455	458	480	488	493	399	423
Persons per hospital	34,815	21,210	27,503	29,506	29,326	30,713	31,270	39,690	40,170
No. of dispensaries	n.a.	n.a.	332	355	347	340	353	n.a.	n.a.
Persons per dispensary	n.a.	n.a.	37,692	38,068	42,499	44,082	43,671	n.a.	n.a.
No. of doctors	380	674	1,932	2,138	2,051	2,033	1,951[c]	2,138	2,792
Persons per doctor	17,500	11,390	6,480	6,360	6,865	7,300	7,900	7,250	6,085
No. of AMPs[b]	446	676	1,225	1,075	1,010	925	1,057	n.a.	n.a.
Persons per AMP	14,910	11,355	10,215	12,607	14,601	16,203	14,585	n.a.	n.a.
No. of Nurses	n.a.	n.a.	5,542	5,653	6,277	8,805	7,214	8,061	n.a.

Notes: n.a. Not available
a (includes maternity clinics)
b Assistant Medical Practitioners
c Provisional

Sources: Perera, 1985: Tables 4 and 5.
Ministry of Health and Women's Affairs, 1992: Tables 1 and 28.
Central Bank of Sri Lanka, 1988-89, Table 10.4.

Apart from the free Western health services provided by the State, there are many privately owned dispensaries, clinics, and even hospitals. A new policy introduced in 1977 by the government allowed medical officers and other technical personnel in the state health sector to undertake private practice outside their working hours. This right had been granted to medical specialists in 1976. The aim of this policy was to prevent qualified personnel from leaving the country and to attract more qualified doctors to rural health centres. It was perhaps the expectation that this policy might lessen the burden on state health services as the sole provider of health services. However, medical practice after hours has given rise to a dual system with conflicting interests: one operating with the aim of providing a service and the other on the basis of making a profit. The overall effect of dual practice was a deterioration of the state health services as practitioners abused the State health service system. Those, for example, who visited doctors outside working hours received preferential access to government health facilities over non-paying patients (Gaminiratne, 1991: 18).

2.8 Self-treatment

Self-medication in Sri Lanka includes both modern and traditional types of medicine. Apart from modern analgesics, various antibiotics can be bought in Sri Lankan pharmacies without a doctor's prescription (Tomson and Sterky, 1986; Wolffers, 1987). In urban areas, in particular, modern self-treatment is very important (Wolffers, 1988: 551). Traditional forms of self-treatment involve homemade herbal preparations and prepared medicine in the form of oils, ointments, and pills. Raw or dried herbs and prepared herbal medicines are available in the herbal shops (Nichter, 1987: 384). Respondents in our Survey reported combining the use of both herbal preparations and modern analgesics, for example, using coriander and Disprin.

2.9 The place of the indigenous health system within the overall health system.

Following the European occupation, the pre-existing health system was neglected by the state. However, as noted above, owing to its popular support, Ayurveda has received official recognition. Ayurveda has, in this century, received greater government support, starting in 1919 when a block of land was donated to build an Ayurvedic hospital in Colombo. An Ayurvedic teaching college was founded in 1929. Since then two more teaching institutions have been established and it has become government policy to provide assistance to Ayurveda, both financially and to formalize teaching (Perera, 1985: 97). With state support, the indigenous medical system of Sri Lanka has been revitalized. There are now Ayurvedic hospitals, dispensaries and practitioners throughout Sri Lanka. A comparison between modern and traditional health facilities is made in Table 2.2.

Table 2.2 Modern and indigenous physicians, institutions and patients treated in Sri Lanka, 1986

Facility type	Population per doctor	Population per institution	No. of in-patients ('000s)	No. of out-patients ('000s)
Modern	8,095	18,900	2,590	32,560
Ayurveda	1,290	55,760	23	3,170

Notes: Ayurvedic physicians include both those registered by the government and unregistered ones.

Sources: Ministry of Health, 1986: Tables 5.2, 5.10, 5.11.
People's Bank, 1987: Table 2:9.
Department of Census and Statistics, 1986a: Table 16:23.

However, while there are many more traditional practitioners than modern ones, most of these Ayurvedic practitioners practise part-time. The total number of full-time traditional practitioners is only 408, that is there are 39,400 inhabitants for every practitioner. Furthermore, in 1983, there were only 46 government and private Ayurvedic hospitals with a total bed

capacity of 1,535 (Perera, 1985: 98-99); largely in consequence, the number of in-patients treated in Ayurvedic institutions was much lower than the number treated in modern institutions.

The government believes that the Ayurvedic sector should be integrated into the national health care system. WHO has recently invited a special adviser to draft a project proposal for the training of 8,400 registered traditional healers to work within the primary health care program. Integrating the modern and traditional health systems will not be simple because the two systems have different concepts of illness and health. Nevertheless, Ayurvedic medical students interviewed by Obeyesekere (1976: 225-226) believed that modern germ theory and the Ayurvedic theory (*tridosa* theory) could be reconciled. The students explained that germs upset the three humours, which then cause illness; humoral equilibrium provides immunity to germs; the germ theory and the humoral theory are independent and equally valid theories of disease causation.

2.10 Why Sri Lankans seek help from distinctly different systems of medicine

The pluralistic approach to medicine is quite common in developing societies and is found, too, in many developed ones. Kunstadter (1975: 350-351) argued that a plural medical system is advantageous to the overall health of a population: it is the norm in many Asian societies to have alternative therapy systems, and it may be desirable to look upon alternative explanations and therapies as a normal part of any health social subsystem.

Garrison (1977: 68), however, argued that plural medical practices constitute a problem for the overall health status of a population. Among the Puerto Ricans living in New York city, the multiple healing system was

problematic because the continuance of folk-healing practices interfered with the successful implementation of Western medicine. Madan (1969: 1475), in an examination of the indigenous health system in the Indian context, identified another difficulty with traditional medicine: `modern medicine [is] experimental, and therefore capable of advances in diagnosis and treatment, [whereas] traditional medicine is a closed system and non-experimental'. Messing (1970: 334-335) reported for Ethiopia that, while traditional medicine has some positive aspects to it, the non-scientific concept of the cause of disease and thus the treatment used lead to high death rates among those groups of the population most likely to abide by traditional treatments. In Nepal, Subedi (1989) claims that the presence of medical pluralism has delayed the acceptance of modern health services. Scrimshaw (1978) noted that in some societies illnesses are regarded as being caused by a person's fate, as divine punishment and consequently as not susceptible to treatment.

People in many developing societies, however, continue to use parallel health systems. Some anthropologists argue that both Western medicine and traditional medicine are used in the developing countries because people are pragmatic and use whatever is available (Logan, 1977; Janzen, 1978). Gould (1977) stated that folk and scientific medicine are strongly related to each other, each fulfilling a social need, each changing its theories and practices according to the needs of the members of the society. Gonzalez (1966), Lieban (1976) and Landy (1977a) argued that indigenous systems of medicine persist because they are complementary to modern medicine with a division of labour in terms of the types of patients or types of illnesses treated by each health system.

In many societies people will choose what they believe to be the most appropriate treatment according to the type and severity of the illness as they perceive it. In South India, allopathic or modern medicine is used for

those illnesses that are regarded as being severe and warranting immediate medical attention (Gould, 1965). However, modern medicine is frequently regarded as too powerful for babies, pregnant women and elderly adults, so even when they have severe illnesses, they are taken to traditional practitioners (Matthews and Benjamin, 1981: 21). In Haiti, intestinal complaints (worms, diarrhoea, or stomach ache) are regarded as less serious and are taken to a physician, a nurse, or a herbalist while more serious complaints such as bronchitis are taken to the hospital or a folk healer who is regarded as a specialist (Coreil, 1983).

A number of case studies presented by Sachs and Tomson (1992) also demonstrate the use of modern and traditional medicine by the same patient. A number of writers have argued, using evidence from developing countries, that the way diseases are categorized determines the type of health care adopted. For instance, Fosu (1981: 472) for Ghana, Van Luijk (1984: 306) for Kenya, Maina-Ahlberg (1984: 330), Pool (1987) for Gujarati Indians, Mulholland (1979) for Thailand and Van Esterik (1988) for Thai and Javanese societies have stressed the importance of such categorization as influencing the type of treatment used. There is, however, a recent argument by Nyamwaya (1987) that concepts of causality have become less important in choosing the type of cure and that it is the demonstrated efficacy of the therapy that matters.

Given that Sri Lanka has a highly developed indigenous system of medicine as well as a scientific system of medicine the nature of the relationship between the two is particularly interesting. Although each treatment system has different or seemingly even contradictory assumptions regarding the cause of illness, Amarasingham (1980: 71) found that Sri Lankan villagers perceive no conflict. Although Western medical practitioners use different terms in identifying the ailments that patients are suffering, the underlying theory is the same: that is, the illness is

caused by a lack of balance in the body. In her case study of a psychiatric patient the traditional healers attributed the illness to humoral imbalance while the Western physician explained it in terms of the loss of energy and weakness of the mind which meant to the patient and his family an imbalance of the body (Amarasingham, 1980: 86-87). Therefore, people found no conflict in moving from one type of healer to another.

Waxler-Morrison (1976: 237) commented on the tolerance of the different systems of medicine:

> If the traditional structure is still intact and thus the pressure to retain indigenous medical practices still apparent, how has Western medicine been incorporated? ... The function of Western medicines are often explained by the family in terms of Ayurvedic theory; in fact, some Western doctors have accommodated to this by explaining their own medication in this way and by adding to their medical prescriptions recommendations about diet consistent with Ayurvedic theory (Obeyesekere, 1971). Probably more important, however, is our observation that Western-trained Ceylonese physicians tend not to challenge the supernatural belief systems of their patients. Patients in the Western hospital's psychiatric ward were sometimes discharged in time for an important exorcism ceremony at home. Hospitalised patients continued to wear talismans: the ward staff was not disturbed if an exorcist appeared with family members to recite some verses and to tie a charmed thread on the patient's wrist.

The same point is illustrated in a number of case studies presented by Sachs and Tomson (1992: 310-311).

Obeyesekere (1977: 177-178) argues that both the physician and the patient in the Ayurveda system share the same beliefs about cause and cure because they both are members of the same culture and the patient can understand the doctor's treatment of his illness; but a Western-trained doctor's[5] interpretation of his illness is `culturally alien' to him. The common belief system between the physician and the patient in the traditional system enhances the patient's confidence in the physician and hence his system of medicine. While I agree with Obeyesekere on this point,

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5 Referred to subsequently as `Western doctors', though most of course are Sri Lankans.

I believe he may be overlooking the importance of the social disjunction between the Western doctor and the patient in Sri Lanka, which leads the doctor to feel that it is beneath his or her dignity to properly inform the patients about their condition.

Sachs (1989: 341-42) has argued that people use Western medicine because they have integrated the qualities of Western medicine into their indigenous ideas of health. People think of Western medicine in terms of Ayurvedic theory, assuming that Ayurvedic medicine restores balance to the body's systems whereas Western medicine heats the body. Provided extra care is taken in terms of food while using Western medicine, no conflict is perceived between the two systems of medicine. When people seek treatment from the Western system of medicine, they believe that the doctor knows what he or she is doing and neither the doctor nor the patient discusses each other's illness aetiology. In this way both parties are satisfied with each other's diagnoses (Sachs, 1989: 345). Sachs's explanation of mutual understanding really means that there is limited communication between the patient and the practitioner. The patient explains his illness using his own cultural interpretation of symptoms which the doctor does not dispute. The doctor merely says what the disease is and prescribes what medicine should be taken. Such an approach makes the patient feel that he knows what the situation is and that the doctor gave the appropriate medicine for what the patient thought was wrong with him.

Sachs (1989) also challenges the theory that mismatch between the Western and indigenous medical practitioners' and patients' interpretations of illness leads to a miscommunication and non-acceptance of the Western system of medicine. She argues that this has proved not to be the case in Sri Lanka, yet the validity of her argument is questionable. Her interpretation of the Sri Lankan situation is that Sri Lankans use Western medicine as they see doctors having authority beyond them. My experience

in Sri Lanka is that doctors are never chosen for their power or superiority, but for their perceived effectiveness as experienced by the patient, patient's family, friends or community. People also do not like just being given the medicine but would like some explanation about the health problem and what has been given to them. In Sri Lanka such information is lacking as the relation between the doctor and the patient is still a distant one, but this does not deter people from seeking medicine again from the same doctor since the people's major interest is in curing the patient.

The simultaneous acceptance of different health systems is the most marked feature of Sri Lankans' health behaviour. Obeyesekere (1969b, 1977) claims that this leads to exclusive use of one type of healer for a specific illness but as Amarasingham (1980: 71-72) and Waxler-Morrison (1976) observe, people use different types of health services for the same illness. Wolffers argues that each type of treatment is used for its specific qualities, with no clear preference for one particular type (Wolffers, 1988; 1989: 1117-1118). Western medicine is used because it is free and it is effective for acute and more serious conditions. Ayurvedic specialists are preferred for certain culturally defined illnesses; acute emergencies, such as snakebites that need care on the spot, are treated by snakebite specialists who provide a combination of Ayurveda and magico-religious treatment. Illnesses arising from a mental shock or fear such as mental illness are taken to magico-religious healers. These illnesses are often treated first by self-medication and then taken to various different healers to cure each aspect of the illness. For example, in the case of mental illness magico-religious treatments are used to treat shock and fear and Western medicine is used to cure other symptoms. Wolffers's argument appears to take us back to Obeyesekere's argument, that there is some distinction between the illnesses that can be treated by a particular type of treatment, but the difference is that, as Amarasingham notes, there is no segregation of a

group of illnesses that can be cured by one particular system, and the same illness can be explained by overlapping theories so people can use different treatments alternatively.

Waxler (1984: 193-94) suggested that the survival of different systems of medicine in Sri Lanka is related to the social structure. Medical systems in Sri Lanka are closely related to the social, economic and political structure of the society and therefore provide social, economic and political power to some members of society. She claims that medical practice in Sri Lanka has such respect that Western medical training provides upward social mobility mainly to the urban well-off. Those who do not have access to Western medical training try to gain high social and economic status through becoming Ayurvedic physicians. This rather attractive argument will be tested by the recent opening of new medical colleges which may reduce the interest in studying Ayurvedic medicine. However, those who cannot gain admission to a Western medical college already have opportunities to become assistant medical practitioners who are equally respected in Sri Lanka. Furthermore, Waxler's argument does not explain the patient's rather than the curer's interest in Ayurvedic medicine. A more important social factor is the medical practitioner's unwillingness to communicate on a one-to-one level and to explain fully the patient's illness and its cause.

A new view towards the persistence of medical pluralism was presented by Nichter and Nordstrom (1989). They argued that not only do people try to find the type of treatment that is most effective for their ailment, but they seek out practitioners who are thought to have a special power of healing, referred to in Sinhala as *atgunaya* meaning a gift for healing (Nordstrom, 1988: 479). However, the same healer may not be thought to have the power to cure all members of a family and for some it could be an indigenous healer while for others it could be a Western healer

who would be identified as being effective. In effect Western medical healers are treated in indigenous terms. The concept of *atgunaya* is something I am familiar with in Sri Lankan culture, but it is mostly associated with children's illnesses.

2.11 Summary and conclusion

This chapter has presented a description of the available health services in contemporary Sri Lanka. There are three major types: Western, Ayurveda and supernatural, all of which are still used. Anthropologists have attributed the persistence of these health systems to a number of factors: different treatments for different illnesses, or the use of each system in turn or simultaneously until it is seen whether or not the treatment achieves the desired result, namely a return to good health. Recent arguments have stressed the social, economic and political institutional role in creating the grounds for sustaining various health systems in Sri Lanka, as well as the perceived quality of the individual physician regardless of the system practised, as factors responsible for the medical pluralism in Sri Lanka.

All these arguments have some merit; the important point, however, is that Sri Lankans see no contradiction in accepting all of these health systems as being valid systems of health treatment. They believe diseases can have multiple causes — but ultimately connected with imbalances in the body — and that the various different types of treatment focus on different aspects of disease causation. This has meant that, in spite of the society's modernization, or perhaps because of it, people continue to use the traditional forms of medicine. As Obeyesekere (1969b: 139) noted, `while people may have accepted Western medicine as a system of cure, they have not accepted Western theories or interpretation of disease'.

In the next few chapters of this thesis I use SLDCP data to examine these issues, by looking in detail at how Sri Lankans diagnose illness and then proceed (or not) to seek treatment, and the factors involved in their decisions. I also examine the factors which influence their decisions such as education, and the influence of the family and the community on decision making.

Chapter 3

Description of survey methodology and study areas

This chapter describes the sources of data used in this study, the methods of data collection, the study areas and a socio-economic profile of the study population. It also evaluates the quality and the limitations of the data used in the present study.

3.1 Sources of Data

Two sources of data are used in this study. The major data source is from the Sri Lankan Demographic Change Project (SLDCP). This project was carried out in 1985 (January to August) as a joint program of the Demographic Training and Research Unit (DTRU), University of Colombo and the Department of Demography, Australian National University. It was a multi-purpose survey which collected information on marriage, fertility, health and mortality and migration. The present study uses the health and mortality-related information gathered.

The second set of data used is the Sri Lankan Demographic and Health Survey (SLDHS), carried out in 1987 by the Department of Census and Statistics (DCS) with the collaboration of the Institute for Resource Development (IRD), and Westinghouse, USA. The SLDHS also covered various topics including fertility, health and mortality of which the health and mortality segment is used in this thesis. Although the SLDHS was a national survey it could not be used as the primary source of data in this study as it does not contain all the information needed.

3.2 Objectives of SLDCP and SLDHS

The main aim of SLDCP was to find out the long term causes of demographic change in Sri Lanka by examining the changes in marriage, fertility and health behaviour. In contrast, the SLDHS's major objective was to provide estimates of current rates of fertility, family planning, morbidity, and mortality to policy makers and administrators. In addition, the SLDHS survey aimed at producing data that could be compared with other countries. Therefore, the SLDHS was primarily interested in looking at overall trends and rates of demographic indicators rather than finding out the causes behind the changes in the rates. For that reason the two surveys adopted different surveying approaches.

Given that the two surveys were conducted to meet different objectives they used different sampling procedures. The SLDHS sought to prove or disprove existing hypotheses by interviewing a sampled group of people. The SLDCP chose the more anthropological method of community participation and intensive in-depth interviewing to formulate hypotheses which were then tested using a structured survey.

3.3 The SLDCP approach to data collection

Data collection in the SLDCP included a structured survey-type questionnaire and census of over 12,000 persons from 2,200 households to provide a basic demographic overview of the communities. The survey also used a community-level micro approach combining an anthropological participant-observation study and in-depth interviews.

3.3.1 The choice of micro approach

Much of the investigation in SLDCP was carried out in depth, using an anthropological approach. The questions asked were mostly open-ended, and lengthy discussions were carried out in every second household to

obtain additional information. The micro approach allowed the principal investigators to involve themselves actively in the interviews and gave them the opportunity to observe the community, thus getting a feel for local life. The investigators, being involved in the interviews, were able to analyse the respondents' answers in the field and probe them for more information. The micro approach also allowed the interviewers to carry out informal discussions to obtain detailed information on people's attitudes on a number of topics. The discussions that the researchers themselves had with the local people helped them to formulate new research directions.

The micro approach was particularly beneficial for a study which was primarily concerned with the local context of health behaviour. Caldwell, Reddy and Caldwell (1988) have pointed out from their South Indian experience that the micro approach was particularly important in obtaining information on morbidity, because survey data were untrustworthy on this topic, as individuals in different societies vary in what they regard as illness. Many South Indians, for example, believed that maladies were the result of divine punishment and they did not regard them as sickness or as being curable. They did not report as ill many individuals who obviously were very sick, nor did they try to treat them. Observing the community in South India helped the researchers to understand how people's attitudes and beliefs influenced the reporting of morbidity.

It is impossible while undertaking a national survey such as the SLDHS to examine new questions arising from the survey findings. In contrast, as Caldwell and colleagues (1988:30-31) noted, a researcher undertaking a micro study can formulate and test new hypotheses. The causal links between the hypothesized variables can be explored through informal group discussions and analysing the information on individuals and families that researchers have accumulated in their files. Aaby (1988: 278) stated that in the survey approach

> reality is analysed in terms of predetermined categories and relations between these categories. The essential types of causal relations and range of outcomes are pre-ordained in the planning of the research project. Much anthropological fieldwork can be seen as an attempt to understand unexpected or new experiences.

McNicoll (1988: 10) argued that the micro approach helps to explain correlations found in surveys. Vlassoff (1988: 76-85) remarked that her use of the micro approach in surveying rural Maharashtran women assisted her in developing new hypotheses and in interpreting relationships between the relevant variables. Both Premi (1984) in India and MacCormack (1988) in Jamaica have shown that many questions raised in fieldwork could only be answered by the micro approach to research.

While there are many advantages in using a micro approach as a method of data collection, it can require much time and resources. Hull, Hull and Singarimbun (1988), for example, have tried combining micro and macro approaches, using the macro method to show statistical relationships which are then explored using the micro method. This is similar to the approach used in this thesis.

3.4 The sample

Sri Lanka is predominantly a Sinhalese-Buddhist country with Tamil and Muslim[1] minority groups. Southwestern Sri Lanka where most of the research sites were located has the most mixed ethnic and religious composition in the country. The sites chosen for the SLDCP survey are indicated in Map 3.1. The chosen areas contain all the ethnic and religious groups in the country, but not always in the same proportions as the national population. Consequently, some of the ethnic and religious groups are over or under-represented (see Table 3.1 for comparison of the religious

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1 The Moors in Sri Lanka are popularly referred to as Muslims. So, in this thesis I will generally refer to them as Muslims.

distribution of SLDCP and Sri Lanka populations). The household census and survey included all families in the survey areas. In-depth interviews were carried out in every second household. This meant that it was not, strictly speaking, a scientifically representative sample of the country as a whole. However, it describes the survey areas investigated accurately.

Table 3.1 Religious distribution of SLDCP and Sri Lanka (Per cent)

Religion	SLDCP	Sri Lanka
Buddhist	60.4	69.3
Hindu	10.8	15.5
Muslim	17.0	7.5
Christian	11.7	7.6
Other	0.1	0.1
Total	100.0	100.0

Sources: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.
Department of Census and Statistics, 1986a.

A representative sample to reflect the overall situation of Sri Lanka was not the objective of the SLDCP. The main purpose of the survey was to investigate the causes of social and institutional change that has taken place in chosen survey areas. The southwest was chosen in particular because of its diverse population characteristics and because it was seen to show the effects of social changes.

The SLDCP, however, does represent much of the country. The Southwest is the most densely populated area in the country with nearly half the country's population. Moreover, all of the major ethnic and religious groups of Sri Lanka are included in the survey (Table 3.1), and the survey areas were chosen from all three of the major recognized sectors of the population: urban, rural and estate. A comparison of aggregate data on religious distribution from the SLDCP and the census of Sri Lanka can be seen in Table 3.1.

Map 3.1 Map of Sri Lanka indicating Sri Lankan Demographic Change Project field sites

3.4.1 SLDCP survey respondents

In the SLDCP, information was gathered about every household member, and whenever possible the interviewers were trained to interview the person of whom information was being asked. For those who were absent throughout the investigation, or were very sick, the relevant information was obtained normally from the housewife (in most cases the mother) or another responsible household adult. For very young children the information was normally collected from the children's mothers. In any survey it is difficult to meet every individual in a family as many individuals will be temporarily away for work or study. However, the research team spent an extended period of time in each area (allowing working people to be interviewed at the weekend), so that the interviewers were able to make several visits to each household and when necessary at night as well. This was made easier by the close acquaintance that the research team had developed with the respondents by then.

3.4.2 The questionnaire and definitions

The SLDCP questionnaire consisted of several parts: a household census, sections on marriage and fertility, health and mortality, and migration. This study uses the data from the health and mortality segment. Questions were asked concerning those who were currently sick; the last person to be sick in the household but who had recovered; and the last person who used or was using different types of treatments.

To find out more about their knowledge of medicine, respondents were asked about the types of medicine being kept in the household and their use. They were also asked about the appropriate treatments for specific illnesses. This was first asked in terms of actual use but later the question was expanded to include the potential use of treatments. This is, therefore, not used in the present analysis because it may not reflect their

actual use, but rather the possibility of using different types of treatment for different illnesses. The survey also collected information on nutrition, immunization, conditions of birth, breastfeeding, supplementary infant feeding, personal hygiene, public health, deaths in the household, age at death, causes of death and changes in health behaviour.

The SLDHS also asked similar questions some of which can be directly compared with SLDCP. For most questions comparisons are difficult because of the nature of the questions asked and because of selectivity. For example both surveys have asked questions on supplementary infant feeding, but the SLDHS had a list of foods from which they asked mothers those which they had given to their children and at what age. The SLDCP asked the same question in more detail: that is what types of supplementary foods were given to infants, and what age they were given. This way it included all types of supplementary foods given to children.

3.4.3 In-depth interviews

The SLDCP conducted two types of in-depth interviews: one was by the project's investigators using key informants or any other respondent who provided useful insights on the society and its changes, and the other by the interviewers employed in the project. This provided the team with a wide range of ideas from people of different backgrounds. The interviewers for in-depth interviews were somewhat more restricted as they were given a set of guidelines, prepared by the principal investigators of the project, within which to conduct discussions. The guidelines, however, allowed the interviewers to probe for more details on the topics given to them. The investigators were present at as many interviews as possible and directed the interviewers to probe at points that seemed relevant.

The respondents for the in-depth interviews were family members with the housewife present as much as possible. However, any member of the family was allowed to add comments and explanations.

The two sets of in-depth interviews were indeed complementary. As the interviewers and investigators sat in the evenings going through the interviews and discussing the findings, there emerged new areas of interest which were linked to the topics that were being investigated. As a result new questions were added to the survey questionnaire.

3.4.4 Coding and data processing

The questionnaires were coded in Australia by experienced research assistants in the Department of Demography. In-depth material was not coded, but edited and compiled into seven volumes for use as case study material. The author was an interviewer, translator, editor and a coder of the data. Data processing was also done in Australia at the Demography Department and the Data Processing Unit, Australian National University.

3.5 Undertaking the project

The project was directed by a group of investigators from the Australian National University and the University of Colombo including J.C. Caldwell, Indra Gajanayake, Pat Caldwell, Laxman Dissanayake and Bruce Caldwell. The interviewing team consisted, in the low-country part of the project, of fifteen female university graduates in social science and in the tea-estates survey three male interviewers were also included.

The researchers of SLDCP employed two geographers to map the field sites and to distribute identification numbers to each household. The mapping and the distribution of numbers made the surveying much easier, because the inhabitants were expecting visitors and the interviewers, therefore, were not complete strangers. Altogether 1,977 households,

containing 10,956 people in the seven Southwestern localities, and 253 households, with 1,290 people in the tea-estates, were successfully interviewed.

Most interviewers had prior experience of interviewing in similar research or in market research, but this was not considered in selecting the interviewers. Their educational background was the essential criterion of selecting interviewers for the low-country project, and for the estate project the ability to speak Tamil was an added qualification. The interviewers were given two weeks of intensive training including class room lectures, dummy interviews and two outside interviews by each interviewer. During the field work, the interviewers were closely supervised. The investigators checked the questionnaires in the evening and the interviewers were given feedback the following morning, so if there were any discrepancies in the interviews they were able to go back to the households and correct them. When the project was under way, one of the interviewers was appointed to stay in the office and to check all the completed questionnaires for completeness and accuracy. By this means it was possible, when necessary, to visit the households again to obtain complete information before leaving field sites. In addition a random sample of households in each survey area was re-interviewed to ensure accuracy. After the interviews, in the evening, the whole research team got together to discuss the day's work, when the interviewers had the opportunity to raise the problems they faced and any areas of the questionnaire they wanted to clarify.

The interviews were conducted in Sinhala in the low-country, and in Sinhala and Tamil in the estates, and the interviewers translated them into English. They were encouraged to leave the original Sinhala version for cross-checking.

3.6 Data quality

The research areas were selected to represent Sri Lanka's major ethnic, religious, caste and economic groups. The survey, however, has over-represented the Moors and the Indian Tamils. With the political unrest prevailing at the time of the survey in the North and East where the Sri Lankan Tamil population was concentrated, it was not possible to conduct a survey that represented the Sri Lankan Tamil population.

Nevertheless, the eight field locations included in the Project provide a diverse representation of the religious, ethnic, caste and economic groups in the country. Two villages were reasonably typical of the Southwest region with contrasting caste and economic groups: Bondupitiya being a mixed-caste village with a high proportion of low-caste population, and Loluwagoda consisting of a high-caste population. The urban poor areas, Maligawatta and Jumma Masjid Road were selected for their distinct environment and also because they represent the typical areas of predominantly Moorish population. The squatter slum area was selected for its high concentration of the Tamils. Nugegoda was representative of middle-class areas of Colombo and Welisara represented a mixture of middle-class and lower-class populations surrounding Colombo. Welisara was also an area with a high proportion of Christians. The tea-estate area of the hill country was chosen because of its distinctive nature and to represent the Indian Tamil population.

The questionnaire was printed in English and had to be translated by the interviewers into the interviewing language, Sinhala. They were guided in this by extensive discussions with the principal investigators. The interviewers were provided with detailed advisory notes on how to conduct in-depth interviews and the main themes to be focused on were translated into Sinhala. During the training process every question was explained and

discussed in Sinhala and the interviewers were asked to write the agreed version on a questionnaire. This provided each interviewer with a guide to the questionnaire.

The major focus of the original research was different from that of the present study. The survey, nevertheless, asked many questions on treatments of illness that can be used to fulfil the present study's objectives. Information gathered during the in-depth interviews provides a useful supplement to the present study on such matters as how a sick person is identified, how quickly treatment was sought, and why one treatment was preferred to another.

An important concern in analysing the above questions is that of selection bias. For example, the larger a household the more likely it is that someone is currently sick. Given that the size of the household usually reflects the number of children, it is also more likely that the current sick person in a large household will be a child. However, the chief focus of the thesis is on the reduction of child mortality. Similarly the question concerning the last person who was sick but has recovered will be most likely to record those who suffer from acute illnesses but will not record those suffering from chronic illnesses which virtually by definition are not open to cure. However, the interviewers were trained and supervised with the aim of detecting minor illnesses and so minimizing the problem.

As the survey raised new problems, questions were added. This means that these questions were not asked in all areas. Thus the degree to which comparisons can be made between all the areas is slightly limited. This limitation, however, was more than compensated by the value of the new questions.

A major problem in a survey such as this is that of translation. As all the interviewers were Sinhalese, some with limited English, there were

some problems in translating the gathered information. The interviewers usually initially wrote the answers in Sinhala which they later translated into English in a separate place, leaving the original Sinhalese version for subsequent checking. The interviewers were given the time to do translations in the office where there was staff support in translation. In some areas, the interviewers were accommodated together and therefore, they were able to discuss among themselves the translation problems. If the interviewers could not adequately translate a Sinhalese reply into English, it was translated later in the office or in Australia. This was one of the author's tasks in Australia.

Another problem is that the Sinhalese words for some sicknesses do not always directly translate into English. For instance, in Sinhalese the words for chest pain and heart attack are the same. Therefore, a chest pain could be translated as a heart attack if the interviewers did not probe enough. Field editing showed that one interviewer had at first made this mistake.

In health surveys a reference period is often used to establish the prevalence of particular illnesses. This survey did not use a reference period, for it was primarily concerned with how an illness was treated, rather than with the prevalence of individual illnesses. A reference period would have been useful, for example, for identifying chronic as well as acute illnesses. However, evidence from many other health surveys shows that, even with a given reference period, errors occur through memory lapse and inevitably the results are biased to some degree (Ross and Vaughan, 1984: 17-18).

In the survey every member of the household was interviewed excluding the very young, the very sick and the very old. However, some respondents were extremely difficult to contact. In a few cases household

information was asked from others but questions relating to the missing respondents were left out. Nevertheless, when asking information about health treatment, inevitably some proxy reporting occurred. In the case of young children in Sri Lanka, mothers are better respondents than the children themselves, because it is the mother who identifies a child as being sick and who obtains treatment for the child. Ross and Vaughan (1984: 16) pointed out that mothers are more accurate than any other family member about children's conditions. They present evidence from the Danfa Project in Ghana that the prevalence of children's morbidity was under-reported when respondents other than the mothers were interviewed.

In Sri Lanka even for grown-up children, any sickness would be reported to the mother before treatment was sought (except in minor ailments like headache and toothache). In most instances it would be the mother who would explain the child's symptoms to the doctor.

A possible limitation in the survey is that illness was self-defined. As Ross and Vaughan (1984: 8-9) state, however, it is not always ideal to employ medical professionals to identify medically defined morbidity because some complaints can be overlooked by the medical professionals. For example, self-reported illnesses such as abdominal pain and backache may not be diagnosed by a doctor at the time of the survey whereas they will identify such conditions as anaemia, heart disease or non-acute malaria which a respondent might not report as suffering at the time of the survey. For health surveys which aim at finding out how people perceive illnesses, such results do not provide useful information. Similarly, when symptom lists are used, it will tend to encourage greater reporting of those sicknesses that the researcher thinks are important. This will lead to an under-reporting of illness (Ross and Vaughan, 1984: 20).

The main purpose of the present thesis is to discover what families believe to be the nature of an illness and what they then do about their illnesses. Therefore, self-reporting of illness is what is relevant.

3.7 The SLDCP research areas and its people

The SLDCP was conducted in two parts; the first part in seven localities of the low-country of the Southwest, included two rural areas (Bondupitiya and Loluwagoda), two urban middle-class areas (Nugegoda and Welisara), two Muslim dominated slum areas (Maligawatta and Jumma Masjid Road) and a squatter slum (Sedawatta) (see Map 3.1 of study areas). In the thesis I refer to the two urban slum areas and the squatter area as urban poor areas.

The Western Province of Sri Lanka, from which the seven low-country survey areas were drawn, is Sri Lanka's commercial heartland and includes the capital city, Colombo, and extensive commuting areas as well as prosperous production of rice and cash crops, mainly rubber, coconut and cinnamon. The population of Western Province is predominantly Sinhalese, and there is also a sizeable proportion of Muslim Moors, Tamils, and Burghers, the descendants of the Dutch and Portuguese conquerors. Religious and language composition of the population in the Province is also similarly mixed. The Sinhalese are predominantly Buddhist with a significant proportion being Catholic. The Tamils are mainly Hindu with a minority of Catholics. The Moors are Muslim and the Burghers are largely Protestant. The Sinhalese spoke Sinhala, the Tamils and Moors spoke Tamil and the Burghers English.

Of the two villages, Bondupitiya was located to the south of Colombo in a mixed rice, rubber and cinnamon growing area. The nearest large town, Aluthgama, is about six kilometres from the field site. A smaller town, Dharga Town, was situated about four kilometres from the village.

For their weekly shopping and for medicine, Bondupitiya people have to go to either of these towns. The villagers had easy access to two small grocery shops, a tea shop and a sub-post office that were located on the main road. The village itself had two divisions: one section where the village temple was located and more prosperous families lived and the other the interior part of the village where the majority of the people lived. Those who lived in the interior part of the village had to walk about a mile to the main road to catch a bus and to get to the local facilities. The temple was used by the research team as the central meeting place in the morning and in the evening because it was the common ground for the villagers of all castes although most of the village population belonged to a Sinhalese lower caste that was not associated with any particular type of occupation.

Many young people in the village worked in the tourist resorts along the coast close to the village or in Colombo, often staying the working week in Colombo and returning home for the week-end. Those who stayed in the village engaged in occupations such as rubber tapping, toddy tapping, cinnamon peeling, other agriculture related work and as wage labourers in a quarry. In addition, some men and women were engaged in illicit brewing and selling of a local alcohol called *kasippu*. Often they were in trouble with the police: police raids are a common occurrence in the village. Several female and male members of the village had been jailed because they could not pay the fine when caught for illicit brewing.

The other village, Loluwagoda, was situated northeast of Colombo, in Gampaha district, and had a population of 1,704 in 348 households. The population was mainly Sinhalese with very small proportions of Burghers and Moors: see Table 3.2 for distribution of religious and ethnic composition in the research areas. The chief occupation of the people involved the production of coconuts and related products. The village was within walking distance of the nearest town, Giriulla, where there were health

facilities, and markets. The village had its own school. Loluwagoda was more rural than Bondupitiya, being remote from large towns, and the people had less exposure to outside employment.

Table 3.2 Ethnic and religious distribution of households in SLDCP research areas.

Characteristics	Survey areas							
	Urban middle-class		Urban poor areas			Rural areas		
	Nugegoda	Welisara	Maliga-watta	Jumma Masjid Road	New Kelani Bridge	Bondu-pitiya	Loluwa-goda	Estate
Ethnicity								
Sinhalese	91.3	78.4	11.7	19.5	60.6	100.0	98.6	33.2
Moor	3.5	6.9	84.9	76.1	27.9		0.9	0.8
Tamil	0.0	6.9	3.4	4.4	10.2		0.0	66.0
Burgher	5.2	7.8	0.0	0.0	1.3		0.6	0.0
Religion								
Buddhist	85.3	43.7	11.3	17.9	57.1	100.0	95.6	30.0
Hindu	0.1	5.3	3.2	3.5	14.4	0.0	0.0	68.8
Muslim	2.2	5.2	83.2	78.4	14.7	0.0	0.5	0.9
Christian	12.4	45.8	2.2	0.1	13.8	0.0	3.9	0.3
N	309	348	197	113	305	383	348	253

Sources: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

Loluwagoda's high-caste status affected its social behaviour *vis-à-vis* Bondupitiya's. In Bondupitiya unrespectable behaviour seemed more acceptable, perhaps because low-caste people had less to live up to. For example, premarital pregnancy seemed accepted in Bondupitiya: a suprising number of such pregnancies were reported in the SLDCP survey, whereas this was not the case in Loluwagoda.

The urban poor areas consisted of two slum areas of central Colombo: Maligawatta and Jumma Masjid Road (JMR), and a squatter settlement, New Kelani Bridge (NKB) just north of Colombo. The two slum areas were close together, but Maligawatta area was poorer and more run down, being predominantly shanty housing, and had been subject to recent flooding. Maligawatta was located near one of Colombo's busiest roads, and as in

many Asian capitals the streets were busy, crowded and unclean. JMR area was a busy area with many market activities. The road on which JMR area was located was used as a daily market place for selling fish, meat, vegetables, clothing and various other odds and ends. NKB area was on the Kelani river bank and subject to frequent flooding. The flooding meant, however, that it was a good area for market gardens. All three areas had easy access to all facilities such as schools, hospitals and shops.

The two slum areas had a large population of Moors while the squatter settlement had a majority of Sinhalese with sizeable proportions of Tamils and Moors. Most adult men in the urban poor areas were employed in trade: Moors in particular are traditionally traders. Among the migrant population of the squatter area, New Kelani Bridge, men worked as wage-labourers and women as market sellers. In New Kelani Bridge area, quite a lot of women and children were also self employed, making paper bags and joss sticks. In the Moorish slums there were obvious income disparities due to some women being employed in the Middle-East as housemaids and sending remittances back to their families, whereas the squatter area's population was uniformly poor.

The middle-class areas, Nugegoda and Welisara, were chosen from the commuting areas of Colombo: Nugegoda is a suburb of Colombo municipality whereas Welisara was about 20 kilometres northeast of Colombo. Although the term `urban middle-class' is used to describe the areas they are not exclusively inhabited by middle-class people as many poorer households live there side-by-side with richer households. The middle-class areas had a high proportion of people working in the professions, in clerical administrative jobs and in business. In Nugegoda, the population consisted mainly of Sinhalese Buddhists. There is also a sizeable community of Burgher Christians (descendants of the Dutch and

the Portuguese). In Welisara the population was mainly Sinhalese but equal proportions were Buddhist and Christian.

The second part of the SLDCP survey was in a tea-estate in Nuwara Eliya District, Central Province, where the majority of the population were Indian Tamil. Most of the Indian Tamils worked on the tea plantation: the women as full-time tea pickers and the men as part-time labourers. Many of the Sinhalese in the area were the managerial staff of the plantation and shopkeepers. The tea-estate was founded and managed by the British before being sold to Sri Lankan interests and later being taken over by the government. The tea-estate population is of interest for demographers because of its very early fertility decline (Langford, 1981, 1982). However, the infant and child mortality levels remain comparatively high: all districts with sizeable plantation populations have on average higher mortality levels than is the case in any other district or in the country as a whole. This makes it an interesting area to study health-related behaviour.

3.7.1 Housing and sanitation

In the villages most houses were semi-permanent with mud walls, thatched roof and cowdung-daubed floors. Some well-to-do people had houses made of brick, cement and tiles. In urban middle-class areas, most houses were very roomy and built with permanent material. Village houses generally had enough room to be reasonably comfortable, and both villages and urban middle-class areas had gardens with various fruit and ornamental trees. The urban poor had no private yards but had, between two rows of houses, a narrow communal courtyard. This was used for defecating by children. There was usually nothing growing in the courtyard. Urban poor people lived in small houses built close together or in semi-detached houses; often they had just one big room. Some people used a sari or a cloth to partition the room: in Maligawatta 74 per cent of houses

consisted of one room, in JMR 66 per cent did so and in NKB it was 69 per cent. The small size of the houses meant that these had barely adequate ventilation. In Maligawatta area 76 per cent of the houses had no windows, in JMR houses 29 per cent did so and in NKB 67 per cent.

The tea-estate had the same problem as the urban poor area as they also had no private gardens. Some families where the male head of the household was a *kangani* (supervisor) had access to a small plot of land where they grew some yams and vegetables. Tea-estate houses are two-roomed line houses, one room being used as a sort of verandah and the kitchen, and the other being the sleeping place. A small number of houses in the SLDCP tea-estate had built a small kitchen separately from the main house and the eldest man in the household, usually the male head, slept there. Their houses had no windows so that smoke from cooking spread everywhere. The reason for not having any windows in the estate houses may have been because of the coolness of the temperature, and that the immigrant labourers who were from South India probably preferred less ventilation. However, Heiser (1936) who introduced hookworm treatment to the estate sector had another explanation. He noted that the reason for not including windows in estate line houses was because `the Tamils had a superstitious fear of light' (Heiser, 1936: 338).

Table 3.3 exhibits the types of water source and toilet facilities in each of the survey areas. Villages and middle-class areas mainly used well water, many households sharing the facility. In Bondupitiya village most wells did not have surrounding safety walls and rain water could easily run into the well. In the other village this was also a problem, but to a lesser extent. The urban middle-class wells were mostly protected. In urban poor areas and in the estate, the major source of water supply was communal pipes. In urban poor areas people did all their washing including washing themselves, their clothes, cooking pots, cups and plates, at the communal

tap. The waste water continually collected under the tap because of blocked drains. In the estate also we observed similar problems, but the problem was less as many families collected water in pots and did such cleaning jobs at home on their own doorstep.

The worst toilet facilities were in the urban poor areas. These facilities were shared by a vast number of people but no one kept them clean. The municipal council was responsible for cleaning them but throughout our fieldwork there was no sign of the toilets being cleaned. The adults claim to use them even though they were filthy, but we observed the young children to defecate in the open space or into the gutters. Although there are communal toilets available on the estate, there was no sign of anyone using them: in Table 3.3, 48 per cent reported not having a toilet. The estate residents reported that communal toilets had been blocked for a long time and that they could not get the estate management to clear them; so people use the tea plantation for the purpose. In Bondupitiya, most villagers used the jungle as their toilet.

One of the interesting facts about the life of the Sinhalese is the importance they place on personal cleanliness. The daily bath of children and adults alike, unless they are ill, is an important activity. Some Sri Lankans are superstitious, and they believe Tuesday and Friday are unsuitable days for showering: they strongly believe that showering on these days causes illness. Nevertheless, taking a body wash on these days is believed to cause no harm. The SLDCP respondents claimed that they washed their clothes daily. Women in the urban poor areas faced a problem of having to use shared taps for washing, so they had to wait till dusk to do it when there were no men around. This is opposite to what Sinhalese believe in: bathing at dusk and midday is believed to attract supernatural influences, so they avoid wells and streams at such times. The time restriction faced by the urban poor women meant that they could not wash

as often as they wished. Estate people, particualrly women, also had similar difficulties, but this is due to their working hours. Estate women worked from 7 a.m till 6 p.m. But they said that after working among the tea bushes they wanted to have a warm bath in the evening. This was clearly evident from the big pots of water we observed being heated in front of each line house in the evenings.

Table 3.3 Percentage distribution of households by type of sanitary facilities in SLDCP survey areas.

	Survey areas							
	Nugegoda	Welisara	Maliga-watta	JMR	NKB	Bondu-pitiya	Loluwa-goda	Estate
Source of water								
Own pipe	2.6	1.1	-	-	-	0.3	1.1	6.7
Well	97.4	91.1	-	-	0.3	99.4	98.9	8.7
- Own well	45.5	36.3	-	-	100.0	1.4	47.0	0.0
Tube well	-	3.4	-	-	-	0.3	-	1.2
River/ stream	-	-	-	-	0.3	-	-	4.0
Communal tap	-	4.3	100.0	100.0	99.3	-	-	79.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Type of toilet								
Flush	5.2	1.4	-	-	1.0	0.8	0.3	0.4
Water seal	87.4	82.8	99.0	100.0	43.9	26.3	44.8	28.0
Bucket	0.3	0.3	-	-	13.4	1.7	2.0	8.3
Cesspit	7.1	13.4	1.0	-	13.8	23.7	50.3	15.4
None	-	1.7	-	-	27.9	47.5	2.6	47.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	(309)	(348)	(197)	(113)	(305)	(354)	(348)	(253)

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

3.7.2 Transport

Sri Lanka generally has a well developed network of roads and railways linking every part of the country. Communication was easy for all SLDCP field sites except the estate where mountainous terrain meant it was difficult to reach the main road. In part of the tea-estate it was about two hours walk to the nearest bus stop, shop or the resident doctor in the estate. Bus services in the estate were infrequent. The nearest town was about 12 kilometres away, so a visit there took an entire day along the narrow winding road. A weekly market held at the main road enabled the estate population to purchase clothing, and household goods. Grocery shopping was usually done by the men at a local store on the main road on Sundays, the same day on which the weekly market was held. People generally bought a weekly supply of food, mainly rice and pulses. Most purchases were on credit and paid on the receipt of the workers' monthly wages. Although the area was one of the major vegetable-growing areas of the country they hardly consumed any vegetables. The estate people complained of pesticides used in vegetables by the commercial vegetable growers, and that they were not suitable for children. Those estate people who managed to acquire a plot of land grew some greens and yams.

3.7.3 Education

By law, in Sri Lanka, children aged between 6 and 14 are required to attend school. The SLDCP survey reveals that most children of those ages are sent to school (Table 3.4), but this varies by area for various reasons, being lower in the estate and the urban poor areas. In the low-country survey areas schools were easily accessible to everyone, but in the estate they were not. When estate people reported their children as still being in school, it does not mean that they actually attend school regularly. Although two schools were available to estate children they did not function

according to a proper schedule. One of the schools consisted of one teacher responsible for students of a wide range of ages. The school, unlike other schools in the country, did not have set hours, or days. It was reported that the school had been closed for the four months before the survey. For the two months we were in the field, the school was not open a single day. People who lived close to the main road sent their children to schools in the nearest village. For secondary-level studies, children have to go to a school in the town which was about 12 kilometres away, but most estate people did not have the means to send them.

Table 3.4 Per cent distribution of children aged 6-14 who ever attended school, never attended and still attending school at the time of survey, in SLDCP research areas.

Area and sex of children		% ever attended	% never attended	% still attending	N
Nugegoda	Boys	98.1	1.9	96.1	155
	Girls	98.3	1.7	94.0	117
Welisara	Boys	94.4	5.6	89.8	177
	Girls	97.7	2.3	95.5	177
Maligawatta	Boys	90.4	9.6	72.8	114
	Girls	78.4	21.6	68.7	134
JMR	Boys	87.7	12.3	83.6	73
	Girls	91.0	9.0	83.3	78
NKB	Boys	88.7	11.3	73.9	142
	Girls	87.3	12.7	74.7	166
Bondupitiya	Boys	94.3	5.7	88.6	299
	Girls	96.4	3.6	88.3	222
Loluwagoda	Boys	97.0	3.0	89.7	165
	Girls	96.6	3.4	87.9	149
Estate	Boys	88.1	11.9	77.8	126
	Girls	82.8	17.2	70.7	116

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

In the urban poor areas and in the estate, the proportion of children attending school was lower than in the rural and urban middle-class areas. In one of the urban poor areas, the main Moorish area, and the estate, there were high proportions of girls who had never attended school and of those who attended school, the proportion of girls who remained in school was also

comparatively low. In Moorish culture girls were not expected to go out and work, and parents were generally concerned that if a girl went to school this might affect her `virtue'. In the estate the schooling of girls has been restricted for many reasons. First, there was a lack of school facilities, secondly it was difficult for girls to find employment outside the estate that requires education while they can easily get jobs as tea pickers for which education is unnecessary or even a handicap, and thirdly, until a girl can get a job she may be expected to mind her siblings and the household while her mother is at work.

3.7.4 Women in the SLDCP research areas

The key socio-economic characteristics of all the women aged 15 and over in SLDCP are listed in Table 3.5 giving an insight into the status of women in the various survey areas. Education levels among women were highest in urban middle-class areas and lowest in the urban poor areas and the estate. Among the urban poor and estate women the proportion uneducated was much higher. Women in these areas were also, in general, much less educated than the women in other areas: the education of women in urban poor and estate areas being restricted mainly to primary-level education.

The education of women in SLDCP is not directly related to employment status, with high proportions of both the most educated and the least educated working. Urban middle-class and, to some extent rural women, had access to professional, clerical and administrative jobs, while most employed women in the urban poor and the estate areas were engaged as labourers. In Maligawatta and Jumma Masjid road areas many women worked in the Middle East as housemaids, and women in Loluwagoda worked in a coir factory. In addition, young girls in urban middle-class and

rural areas had the opportunity to work away from home in garment factories in the free trade zone or in any other industrial town.

Table 3.5 Percentage distribution showing socioeconomic characteristics of women aged 15 and over in SLDCP, 1985 and 1987.

Characteristics	Survey areas							
	Urban mid. class		Urban poor areas			Rural areas		
	Nugegoda	Welisara	Maliga-watta	JMR	NKB	Bondu-pitiya	Loluwa-goda	Estate
Education in years								
No education	8.6	6.4	31.1	18.6	24.0	16.1	10.1	32.1
1-3 years	3.1	5.4	18.7	17.7	18.8	16.4	9.0	25.8
4-6 years	9.7	16.6	34.6	35.4	31.6	22.0	21.8	30.2
7-9 years	18.2	24.4	12.4	17.3	18.6	15.4	23.1	6.8
10 -11 years	49.8	40.5	2.9	10.5	5.8	27.4	31.2	5.1
12 or more	10.5	6.7	0.3	0.4	1.1	2.7	4.8	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	637	644	347	237	446	697	602	414
Working status								
% working	32.3	28.8	21.4	19.1	31.2	14.5	28.9	68.8
% not working	53.2	57.5	76.0	74.6	64.8	74.3	59.6	25.4
% students	11.1	10.6	2.0	5.5	2.7	8.2	9.2	3.6
% retired	3.4	3.1	0.6	0.8	1.3	3.0	2.3	2.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	637	644	347	237	446	697	602	414
Type of work (only those working are included)								
% in clerical or professional	42.3	35.9	2.7	4.4	4.3	18.8	18.5	0.7
Commerce	9.0	10.9	5.5	8.9	9.4	0.0	9.8	1.1
Skilled labour	28.4	14.7	12.3	11.1	12.9	17.8	19.7	0.4
Agriculture or unskilled labour	20.4	38.6	79.5	75.6	73.4	63.4	52.0	97.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	201	184	73	45	139	101	173	285

Note: Column totals may not add up to 100 due to rounding.

Sources: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

3.8 The SLDHS sample

The SLDHS was a nationally representative sample, except for two provinces (the Northern and Eastern provinces were excluded from the sample because of communal disturbance). Data collection began on 18

January 1987 and was completed by the end of March in most areas. In some areas (not named) the field work began late and therefore was completed in May. The SLDHS differs in many ways from the SLDCP (for example, sampling, the respondents, interviewing) but can still be compared.

3.8.1 Sample design

The SLDHS divided the country into nine zones according to socio-economic and ecological criteria. Zones 8 and 9 (the Northern and Eastern provinces) were not included in SLDHS as it was not possible to conduct a survey in these areas because of communal disturbances. The sample was allocated equally with a target of 900 completed individual interviews in each zone with the exception of zone 5, where 1,350 women were interviewed to permit over-sampling of the estate population. The allocation of a uniform sample size meant that the overall sampling fractions varied in inverse proportion to the zone population. The sample frame was based on the 1981 census block records but these figures, where possible, were updated in 1986 particularly in the newly settled irrigation areas. The zones, for the purpose of sampling, were stratified into three strata, urban, rural and estate. Systematic sampling procedures were used in all stages of sample selection including the selection of housing units. (Department of Census and Statistics, 1988: 5-9).

The selection of housing units in SLDHS was undertaken in two or three stages depending upon the stratum. In densely populated zones 1, 2 and 3, and the urban strata of all zones, a three-stage design was used. In the first stage, a stratified sample of primary sampling units (PSU) was selected with probability proportional to size (PPS). Fifty-four primary sampling units (PSU) were selected in zones 5, and 36 in each of the other zones. Within each zone, the number selected in each stratum was chosen

in proportion to the strata population. At the second stage, within each PSU, two census blocks were selected systematically with PPS. The final stage was to choose the housing units in selected census blocks with reverse PPS to obtain a self weighting sample within each stratum. In the non-urban strata in zones 3 to 7, the procedure was slightly different, only one block being selected per PSU. This procedure required two stages: a first stage to select the blocks and a second stage to select housing units (Department of Census and Statistics, 1988: 8).

3.8.2 Households and respondents of SLDHS

The SLDHS included only private households, people residing in institutions and institutional households being excluded (Department of Census and Statistics, 1988: 7). Eligible respondents in SLDHS were females ever married between the ages 15 and 49 who had slept in the household the previous night. The women were asked questions about themselves, their husbands and the children they had during the five years before the survey. The sample consisted of 8,119 households in seven zones, of which 96.3 per cent were surveyed successfully. Finally a total of 6,170 households were identified as meeting necessary requirements for detailed interviewing and 5,865 ever-married women were interviewed with a response rate of 95.1 per cent (Department of Census and Statistics, 1988: 13-14).

3.8.3 The questionnaire

The SLDHS used two questionnaires, household and individual, both of which were pre-tested. The household questionnaire was used to list all usual household members and visitors who slept in the household the previous night. The age, sex, and marital status of all the persons listed in the schedule were recorded. This list was used to identify the eligible respondents to be interviewed.

Once the eligible respondents had been identified, the individual questionnaire was administered to them. It took around 35-40 minutes to complete an interview. The individual questionnaire consisted of nine sections:

1. Respondent's background.
2. Birth history - dates of all live births and infant and child deaths.
3. Contraception.
4. Child health - immunization status, episodes of diarrhoea, breastfeeding, the use of supplementary food, prenatal care, and assistance at delivery.
5. Marriage and migration.
6. Fertility preferences.
7. Husband's background and respondent's work.
8. Socio-economic indicators.
9. Anthropometric data.

3.8.4 Field staff and training

The interviewing team for the SLDHS consisted of 48 interviewers and 9 supervisors (4-7 female interviewers and one supervisor for each zone) and an additional 18 `measurers' who collected anthropometric data (DCS, 1988: 10-11). Five field co-ordinators were appointed to co-ordinate field work and to implement quality control measures. These measures included visiting interviewers in the field and reviewing completed questionnaires.

Two weeks training was given to all the field staff. The training of interviewers included role playing sessions, and exercises to familiarize them with the questionnaire. Since the SLDHS was the first such survey to collect anthropometric measurements, special attention was given to the training of the measurers.

3.8.5 Quality of SLDHS data

Questionnaires were edited in the field in the evenings following the interviews to check for consistency and missing data. The coding of data was done at the Department of Census and Statistics (1988: 12; Gaminiratne, 1991: 48).

Data on age, particularly of older people, are rarely 100 per cent accurate in surveys. In SLDHS, age data were asked both in terms of age at the time of interview, and the year and month of birth. Of women interviewed, 90 per cent were able to give both the year and month of birth with documentary evidence, 6 per cent were able to give only the year of birth and 4 per cent were able to give neither the year of birth nor month of birth. For this 4 per cent an imputed age was assigned (Department of Census and Statistics, 1988: 15-16).

3.9 Socio-economic characteristics of respondents in SLDHS in comparison with the SLDCP

Table 3.6 lists the background characteristics of the SLDHS respondents (women aged 15-49) in comparison with SLDCP. The SLDCP over-represents the urban population and somewhat under-represents the rural population. The urban population is large because the SLDCP included two urban slum areas.

Table 3.6 Socio-economic characteristics of respondents of SLDHS and SLDCP.

	SLDHS	SLDCP
Sector	%	%
Urban	17.2	59.0
Rural	71.5	30.1
Estate	11.2	10.9
Age		
15-19	2.3	4.3
20-24	12.3	15.2
25-29	19.0	19.0
30-34	20.5	18.5
35-39	19.3	18.5
40-49	26.6	24.4
Religion		
Buddhist	81.9	60.4
Hindu	5.8	10.8
Muslim	4.8	17.0
Christian	7.5	11.7
Education		
No schooling	11.2	11.5
Primary	29.7	35.4
Secondary	36.2	33.4
Higher	22.9	19.6
Total	5865	3259

Source: Primary analysis of Sri Lanka Demographic and Health Survey (1987) data
Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

3.10 Summary

This chapter has described the sources of data used in the thesis, the methods of data collection, some of the influences on the quality of data and some of the key characteristics of the survey areas and of the respondents. The SLDCP is the main data set used in the study, and is therefore described at length. The SLDHS is used to provide an overall picture of Sri Lankan health-related behaviour. However, care has to be taken in comparing the results of the two surveys as not all the information is comparable.

Chapter 4

Disease and treatment in Sri Lanka

4.1 Introduction

This chapter uses Sri Lankan Demographic Change Project (SLDCP) data to examine how illnesses are treated in Sri Lanka and how treatment is influenced by concepts of illness. The chapter first examines the complaints from which people were suffering at the time of the survey, the various types of health services used, the distance travelled to health services and the cost of treatment in the survey areas. It also investigates whether the way people treat specific illnesses is related to their demographic (age, sex) and socio-economic (residence, education, religion) characteristics and how perceptions of illness influence treatment. The chapter then investigates the sensitivity of Sri Lankans to illness in terms of how individuals are identified as ill and subsequently looked after, how treatments are sought and how treatment is changed if the initial treatment is not perceived to be effective. Finally it examines the decision making process within the family and the impact of this on health behaviour.

The data for this chapter comes primarily from three main questions in the survey: the first on the treatment of sick people in the household at the time of interview, the second on the last time people used a particular health service and for what illnesses they were used, and the third on the illness and treatment of the last person who was sick in the household. The answers to the second question, when people last used a particular health service, refer to a variable period, sometimes well into the past. This is not a problem in terms of the objective of the study, because the study's interest is in ascertaining the relationship between the type of illness and the nature of treatment used for it. However, a four-week reference period was used to

measure the extent to which people had used a particular type of treatment. When analysis was carried out to determine the socio-economic and demographic differentials in treating illnesses, the information on the last use of health services was limited to the year of the survey to minimize recall error. The data, therefore, refer to a period of 2-8 months depending on the survey area; for example interviewing was carried out in Bondupitiya in January-February 1985 and so treatment refers roughly to a two-month period. On average treatments rarely were longer than three months before the interview.

4.2 Diseases in study areas

At the time of interview, the proportions of households with currently sick persons amounted to 29 per cent in the three urban poor areas, 25 per cent in the rural area (Loluwagoda), 21 per cent in the two urban middle-class areas, and 24 per cent in the tea estate. Among the illnesses people reported themselves to be suffering from at the time of interview, the most common were respiratory, particularly the common cold, and cough. Fever was of major importance in two of the poor areas and asthma and rheumatism were the other illnesses often cited. Table 4.1[1] shows the most commonly reported groups of illnesses, grouped following the WHO manual of International Statistical Classification of Diseases, Injuries and Causes of Death, nineth revision of 1975 (WHO, 1978). Since the illnesses are those reported by the study respondents, sometimes it was not possible to match them exactly with the WHO categories in which case they were included in the nearest category. Since cold, cough and catarrh, and fever are commonly experienced illnesses, they are treated independently in the

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[1] Appendix 4.1 shows how reported illnesses have been grouped according to the ICD and Appendix 4.2 shows the distribution of reported illness during the survey by grouped areas.

analysis as these illnesses were thought to obscure the health treatment behaviour.

Table 4.1 Distribution of the most frequently reported illnesses suffered at the time of survey in survey areas separately.

Illness	**Area**						
	Maligawatta	JMR	NKB	Nugegoda	Loluwagoda	Welisara	Estate
Fever		7	21	7	10	8	6
Headache	4						4
Cold, cough, catarrh	4	8	12	12	27	20	15
Rheumatism/ arthritis/ body pains			4	11	18	5	
Asthma	4	5	9	8	5	6	5
Skin disease			7	7	7		
Stomach ache and diarrhoea	5		4			4	5
Wound/injury	4				4	4	
Eye ailment					6		
Kidney ailment				4			
High blood pressure				4		4	
Bronchitis	4					4	
Chest pain	4					5	
N = Total sick people	55	37	88	91	115	79	61
% households with a sick person	27.9	32.7	28.9	29.4	33.0	22.7	24.1

Notes: Question was not asked in Bondupitiya.
Illnesses included are the ones reported by at least 4 people.
JMR: Jumma Masjid Road.
NKB: New Kelani Bridge.

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

Surprisingly, when the data were analysed, the residents of Maligawatta reported only four cases of common cold although from the fieldwork observations it was clear that children in Maligawatta, as in the estate, frequently had colds. The frequent occurrence of colds among the Maligawatta poor may have led the respondents to accept this condition as a natural part of daily life. The crowding and the insanitary nature of the communal facilities in the urban poor areas seem to provide ideal conditions for the spread of disease. The lack of a form of treatment for minor respiratory disease among the urban poor, particularly Muslims and Tamils, is an additional reason why they may not conceptualize such illness as a disease. An alternative dubious explanation is that the data are correct and that there are higher levels of resistance in the poor. Minor respiratory conditions may also have been underreported in the estates because the damp climatic conditions of the estates may encourage people simply to accept that children are prone to colds. Little could have been done to prevent colds given that keeping children indoors was not possible because estate parents had to work away from the home, and that estate houses were generally smoky from cooking as they lacked proper chimneys.

Fever was mostly reported in two of the urban poor areas. Fever by itself is not a disease but a symptom. It often indicates the occurrence of infectious disease, the presence of which in the urban poor areas would be expected given the poor environment due in particular to frequent flooding; significantly the study was carried out soon after the annual flooding. This would imply evidence of greater annual peaks of infectious diseases in the urban poor areas and hence is one explanation of higher mortality in those areas. Houses of the poor are often built on land which is regarded as unsuited for residence from an environmental and health point of view, such

as low-lying and flood prone land. The crowdedness of urban poor households provides ideal conditions for spreading disease[2].

4.3 Treatment

Modern medicine is the most common form of treatment in all areas. Self-treatment comprising modern and traditional home medicine, is also widely used, particularly by the urban middle-class and rural people. This is shown in Table 4.2a reporting the current users of health services and Table 4.2b reporting the use of health services in a four-week period. Modern medicine is easily available in Sri Lanka, especially at hospitals where medicine is provided free of charge. Accessibility to modern facilities is easy. This is particularly so in the low-country study areas, all of which are in the densely settled Southwest of the country, with the majority in or near Colombo, the country's capital and primate city: see section 4.4 on distance to and cost of treatment. In the tea estate, in contrast, the proportion of the people who used modern health facilities was much lower, particularly in the case of those who went to fee-charging clinics. Estate people had access to a free health dispensary on the estate but the nearest government hospital was far away. There was no private practitioner nearby. A complaint often made by estate respondents about the estate clinic was that there was no medicine at the clinic and if they required better care in the form of modern medicine they had to go to the estate doctor's home next door and pay 20 rupees or more for a visit.

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2 On average, Maligawatta had six persons per household while Jumma Masjid Road had 6.5 persons. One rural area, Bondupitiya, also had an average six persons per household and all other areas had an average of five persons per household. In the two main slums, there was a large proportion of households where more than one married couple and their children lived. In Maligawatta, such complex households were 26 per cent and in Jumma Masjid Road it was 33 per cent. Of other areas, Bondupitiya had 21 per cent complex households, New Kelani Bridge (squatter slum), Nugegoda, and Loluwagoda 15 per cent, Welisara 13 per cent and Estate 14 per cent.

An important explanation for the apparently greater use of modern medicine by the respondents in the low-country is education. The rising educational level, particularly that of females, in the low-country rural and urban middle-class areas may have encouraged the use of modern health services by challenging traditional behaviour. Educated women worldwide tend to be more independent in decision-making and they are less restricted to their households or villages, able to go beyond their homes to seek better health treatment, to modern services, or to the better-trained traditional practitioners (see Caldwell, 1979). Okafor (1983: 593), for example, has shown that in Nigeria the more educated visit hospital more frequently for treatment because they are more conscious of sickness and react more quickly in seeking treatment.

Table 4.2a Number and percentage of visits to different health services for the treatment of sick persons at the time of interview, in grouped survey areas.

Type of treatment	Urban middle class		Urban poor		Rural		Estate		Total %
	N	%	N	%	N	%	N	%	
Modern									
Hospital (free)	69	27.7	105	35.8	58	34.5	36	34.3	32.9
Private (paid)	93	37.3	88	30.0	46	27.4	14	13.3	29.6
Traditional									
Ayurveda	37	14.9	27	9.2	31	18.5	8	7.6	12.6
Magico-religious	5	2.0	13	4.4	2	1.2	9	8.6	3.6
Self-treatment	40	16.1	51	17.4	27	16.1	38	36.2	19.1
Combinations	5	2.0	3	1.0	1	0.6	-		1.1
No treatment	-		7	2.4	3	1.8	-		1.2
Total no. of visits	249	100.0	293	100.0	168	100.0	105	100.0	100.0

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

Table 4.2b Number and percentage of visits made by households to different health services for the treatment of sick persons during the last four weeks preceding the interview, in survey areas.

	Urban middle-class		Urban poor		Rural areas		Tea estate	
	N	%	N	%	N	%	N	%
Modern								
Hospital (free)	120	18.1	196	31.8	238	32.5	67	26.5
Private (paid)	226	34.1	191	31.0	201	27.5	38	15.0
Traditional								
Ayurveda	41	6.2	23	3.7	93	12.7	5	2.0
Magico-religious	39	5.9	87	14.1	57	7.8	23	9.1
Self-treatment	292	44.1	205	33.3	331	45.2	111	43.0
Other	-	-	2	0.3	5	0.7	1	0.4
Total no. of households	662	100.0	616	100.0	732	100.0	253	100.0

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

In the present study, the major difference indeed was not whether patients used Western medicine, but the type of Western medicine: private doctors or hospital facilities. In urban middle-class areas, where people were better educated, they were more likely to go to private practitioners of Western or modern medicine. This may in part be because they were more able to afford private medical care. In contrast, the urban poor showed a slight preference for using hospital facilities which are free and which are located close to two of the poor areas: they had to travel on average less than one kilometre. Even so, many poor respondents went to private doctors because then they could choose the sort of doctor they wanted, an especially important point for Muslim women who prefer the service of a female doctor. The use of private Private doctors was slightly less than hospital use among rural people. Private doctors were generally more available, often practising near the village, whereas to reach a hospital may have meant taking two or three buses, but economic constraints were a major factor in discouraging frequent recourse to private doctors: see Tables 4.4 and 4.5 on the distance people travelled and cost of treatment in study area.

Despite the easy availability and low cost of modern medicine and the neglect of traditional medicine by the Government during the colonial period, there is still a substantial demand for traditional care in Sri Lanka. In the study areas, a substantial proportion of people had sought traditional cures. However, the areas differed considerably in terms of their preference for particular forms of traditional medicine.

The urban middle-class and rural people, who were largely Sinhalese, were more likely to use Ayurvedic treatments than the mostly Muslim and Tamil people of the urban poor areas and the estate whose equivalents to Ayurveda are Unani and Siddha respectively. Ayurvedic treatment is widely available in Sri Lanka, but Unani and Siddha are not so commonly offered. The interviewers, who were predominantly Sinhalese, may also not have been sufficiently conscious of the distinction between the three types of medicine, and might therefore have failed to record fully the use of Unani and Siddha. Nevertheless, the use of these forms of medicine may well have been less in the urban poor areas and the estate because the necessary medicinal herbs are difficult to find. The inhabitants do not have gardens or any other places near where the herbs might grow, the poor areas being located in the heart of Colombo. The survey found, however, that most individuals in the urban poor areas who used self-treatments such as medicinal herbs were Sinhalese. The estate people, too, did not own gardens and only a few influential families, such as the *kangani* (overseer) family, had a plot of land for growing vegetables. Since the urban middle-class areas are located outside central Colombo, they can maintain their own gardens and finding herbs is not so difficult, though it is not as easy as in the rural areas. However, for those without gardens there are various herbal shops *(beheth badu kada)* where fresh and dry herbs can be bought, although they can be expensive and may be out of reach for the poorer people.

The use of magico-religious treatment was highest among the urban poor dwellers and the estate people; after exorcism, which is essentially a Sinhalese treatment, the major expenditure was on magico-religious treatment. It perhaps reflected the Muslims' and Hindus' strong belief in God as the dominant influence over their lives leading them to resort to divine blessings for cure.

Self-treatment, which employs both simple herbal preparations and pharmaceuticals, was favoured by the urban middle-class, rural and estate people. Estate people relied heavily on self-treatment for those who were sick at the time of the survey, not only at the onset of illness: they persisted with home treatments even as the illness continued. This was in contrast to the behaviour of the middle-class and rural people, who mainly used self-treatment at the outset and, if the illness persisted, soon changed to more professional types of cure. Lack of awareness of the danger of prolonged self-treatment, or the lack of treatment choices available to them, led many of the estate people to continue giving home remedies to the sick.

The SLDCP survey indicated that many health problems including fractures, which according to researchers such as Noten (1985) and Wolffers (1988) were treated primarily by traditional healers, were treated using modern medicine. There are a number of reasons why it would be expected that people would prefer to use traditional treatments for many complaints. Many people prefer traditional bone setting for fractures because Western treatments are thought not to provide a permanent cure, and to be painful. Many of our respondents claimed that modern healers cut their limbs to cure fractures, whereas traditional healers used gentle treatments, massaging with oils, but in practice very few had Ayurvedic treatments for broken bones. Noten (1985: 82) found in a village in Sri Lanka's dry zone that people had no objections to modern health care, but they were very frightened of injections and of surgery: to avoid such treatments they used

traditional care. The difference between Noten's study and the present one may be that the study areas are located in a more developed area of Sri Lanka and people have better access to health facilities, whereas in the dry zone such facilities are scarce.

Poor patient-doctor communication also discourages some people from using Western medicine. Western-style doctors are more likely to be from big towns and to expect people's respect, and, therefore, the patients do not converse freely. Doctors who work in hospitals are particularly unfriendly, partly because of the heavy workload, private Western practitioners generally having closer contact with their patients and indeed depending on them for their income. `Native doctors' who are known to villagers are easier to cope with, and as a consequence many villagers prefer to use them.

Noten (1985: 82) remarked that some people in her research area preferred traditional medicine to modern medicine because they said that modern doctors prohibited certain `cold foods' such as wild pig[3] or pumpkin, for long periods (with rabies patients for life), while traditional practitioners did so only during treatment. However, according to my experience and research Private doctors are less likely to prescribe food restrictions than traditional ones and it is only when the patient specifically asks for food restrictions that the modern doctors advise them to avoid such foods. If modern doctors do prescribe in accordance with food taboos, it is largely because of the influence of traditional ideas of proper and improper foods. Furthermore, as Obeyesekere (1976: 224-225) learnt from the discussions he had with modern doctors in Sri Lanka, they forbid some foods to gain the confidence of their patients. People believe that, for their illnesses, certain types of food are not proper and they want this to be certified by their doctors. Since doctors realize this, they suggest that various foods should not be eaten. Nichter (1980: 229) similarly observed in an Indian village

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3 In my experience wild pig meat is regarded as a hot food.

that patients attending allopathic (Western) doctors consulted them as to what food should be eaten or avoided for their illnesses.

There were a total of ten sick persons who were not getting any treatment at the time of survey, seven in the urban poor area and three in the rural area. The distribution of these patients by their illness, age and sex is shown in Table 4.3. One of the untreated persons listed in Table 4.3 (a five-year old with measles) was in Jumma Masjid Road while the other six people were in the New Kelani Bridge area. Measles patients are often not treated as the disease is regarded as being caused by angered gods, and so the sick person is left to rest until recovery. The failure of two older females in rural areas to receive any treatment for dizziness and the inability to walk, may have been due to their own decision, perhaps because of the lack of available treatment or perhaps because they regarded such illness as inevitable with old age.

Table 4.3 Distribution of the sick who did not receive any treatment by age, sex and area of residence

Type of illness	Sex	Age	Location
Fever	Male	11 years	Urban poor
	Female	14 years	Urban poor
	Female	25 years	Urban poor
Measles	Male	5 years	Urban poor
Rheumatism	Female	35 years	Urban poor
Asthma	Female	1 year	Urban poor
Epilepsy	Female	42 years	Urban poor
Cold, cough, catarrh	Female	42 years	Rural
Unable to walk	Female	68 years	Rural
Dizziness / fainting	Female	75 years	Rural

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

Interestingly, eight out of ten untreated sick persons were females. Since six of them are adults and the numbers are too small, it is not possible to say definitely that there is an indication of female neglect in treatment. It is striking however that most of the cases are in the urban poor areas with a high Muslim population. It is possible that female health is not regarded as important or it may be that it is more difficult for females to leave the household and seek treatment. Furthermore, as housewives, women tend to look after others' health and may neglect their own.

4.4 Distance to and cost of different health services in survey areas

Distance and the cost of treatment are major considerations in deciding on the type of treatment used. In Sri Lanka, the travelling distance, on average, is less than 1.3 kilometres from home to a health facility of any type, and less than five kilometres to a free government modern health facility (Simeonov, 1975: 91-99). Of the SLDCP research areas, for urban areas, the average distance to a modern facility, either free or paid, is less than the national figure, while the average distance to a modern health facility in rural and estate areas is just above the national average. Because of the large number of private doctors practising in the country, the average distance to a modern facility in the research areas is much less than to an Ayurvedic facility which ranged from 6 to 10 kilometres (Table 4.4). With such easy access to health services it is not surprising that mortality levels are low. However, the urban poor residents who have the easiest access to health facilities have the highest mortality levels of all the study areas. The infant mortality rate in the urban middle-class areas was 29 per thousand births; among the urban poor areas, in the predominantly Muslim areas the infant mortality rate was 94 and in the squatter area it was 65; and in the villages 43. Corresponding life expectancy at birth in the urban middle-class areas was 74 years, in the

Muslim area 55 years, in the squatter area 61 years, and in villages 67 years (Caldwell et al., 1989).

The mortality differences can be attributed to many factors, but the difference in the education and social status of women is important. Muslim women generally have a much lower educational level and social status than Sinhalese women, and less decision-making power. Muslim women have comparatively little knowledge of the outside world and are less likely to use all the available facilities or to use them efficiently. Clearly, if mortality is to decline, a service must not only be available but also be used. As noted above, it is significant that seven of the 10 individuals who were currently ill at the time of the survey but were not receiving treatment were in the urban poor areas.

Table 4.4 Median distance travelled (in kilometres) to a health facility in grouped survey areas

	Area and distance travelled				
Health facility	Urban middle-class	Urban poor	Rural areas	Estate	All areas
Modern treatments					
Hospital	3	2	5	5	3
Private doctor	2	< 1	5	5	2
Traditional treatments					
Ayurvedic doctor	6	10	6	8	7
Exorcism	<1	5.5	<1	8	5
Yantra	6	< 1	3	3	2
Mantra	3	< 1	2	2.8	2
Temple/church	2	< 1	<1	< 1	<1
Other	1	1.5	1.8	1.5	1

Source: Primary analysis of Sri Lankan Demographic Change Project Data 1985 and 1987.

Table 4.5 shows the cost involved in using each facility. Traditional medicine, which is comparatively expensive, is still widely used. In spite of its cost, people are willing to use it when a patient's life is in danger. An

exorcism can cost 2-3 months of a villager's income, yet if the relatives feel it necessary they will make the sacrifice. The relatively well-off urban middle-class people spent more money on hospitals probably because they were private patients of the hospital doctors while the urban poor and the rural people used the free hospital facilities. For the estate people the cost of going to a hospital or to a private Private doctor and the distance to such facilities are much the same. This indicates that the estate people are less likely to get free medicine from the estate doctor. The claim the estate residents often made was that there was no medicine at the estate dispensary, but by paying the estate doctor they could get medicine. However, what is impressive about this high expenditure is not that the amount of money spent on health services necessarily has an impact on mortality, but that it indicates the seriousness with which Sri Lankans regard health care.

Table 4.5 Median cost involved in treatment at a health facility in different residential areas

	Area and money spent on treatment (in rupees)				
Health facility	Urban middle-class	urban poor	Rural areas	Estate	All areas
Modern treatments					
Hospital	10	5	5	25	10
Private doctor	30	20	20	30	25
Traditional treatments					
Ayurvedic doctor	20	10	8	50	15
Exorcism	1000	750	1600	200	1200
Yantra	300	100	125	90	100
Mantra	30	15	30	75	30
Temple/church	50	25	50	50	45
Other	200	35	125	70	100
Self-treatment	2	2	2	3	2

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

4.5 Influence of the concept of illness on the use of health services in South-West Sri Lanka.

I discussed in Chapter 2, with reference to a number of developing societies, how when someone is ill the treatment chosen is influenced by the perceived cause of the illness. The next sections of this chapter deal with the issue of how in Sri Lanka the treatment chosen is conditioned by the theory of disease causation.

4.5.1 Type of treatment and the nature of disease in study areas

In the study areas people use modern treatments for most diseases although for some diseases traditional treatments are preferred. Table 4.6a, on the first treatments given for various illnesses, shows that almost all illnesses except colds, cough and catarrh were predominantly treated by modern health care. Table 4.6b refers to the last time respondents used a particular treatment and the illnesses that were treated by each; the treatments here may not necessarily reflect the first action they took regarding that particular illness. It is reasonable to suggest that at first people took modern medicine and later sought other treatment options as well. This is illustrated below with flow-charts.

When different treatments are used, there is a tendency, as Obeyesekere (1976) noted, to use specific treatments for a particular purpose. Ayurvedic medicine has had an important place in treating those illnesses which people believe to be due to humoral imbalance such as chronic rheumatism, believed to be caused by excess wind, and skin disease. Similarly, cold, cough and catarrh are regarded as being caused by the disequilibrium of `phlegm' in the body, and people treat them with home-made Ayurvedic herbal preparations (Table 4.6a and Table 4.6b).

Table 4.6a Type of first treatment given to those sick at the time of survey with specific diseases, all ages, male and female

Illness group	Hospital/ private doctor	Ayurveda doctor	Magico-religious	Self-treatment	Other[a]	None	Total N	Total %
Fever	39.7	0.0	1.6	54.0	0.0	4.8	63	100.0
Cold,cough,catarrh	39.8	3.1	0.0	54.1	1.0	1.0	97	100.0
Other respiratory diseases	76.2	13.1	0.0	8.3	1.2	1.2	84	100.0
Infective & parasitic disease	25.0	0.0	12.5	50.0	0.0	12.5	8	100.0
Intestinal infection	77.8	7.4	0.0	14.8	0.0	0.0	27	100.0
Chronic rheumatism	53.8	25.0	3.8	15.4	0.0	1.9	52	100.0
Other chronic conditions	83.3	8.3	0.0	0.0	2.8	5.6	36	100.0
Skin disease	63.2	15.8	0.0	18.5	2.6	0.0	38	100.0
Mental & psychological diseases	100.0	0.0	0.0	0.0	0.0	0.0	7	100.0
Accident & injury	82.1	7.1	0.0	7.1	3.6	0.0	28	100.0
Female ill-health	100.0	0.0	0.0	0.0	0.0	0.0	3	100.0
Disease of circulatory system	78.6	7.1	0.0	14.3	0.0	0.0	28	100.0
Nutritional deficiency	87.5	0.0	0.0	6.3	0.0	6.3	16	100.0
Urinary and bladder complaints	77.8	22.2	0.0	0.0	0.0	0.0	9	100.0
Headache	43.8	6.3	0.0	50.0	0.0	0.0	16	100.0
Other illnesses[b]	100.0	0.0	0.0	0.0	0.0	0.0	3	100.0
N	329	46	5	132	4	10	526	100.0

Notes: a Other includes combination of modern and traditional treatments.
b Other illnesses include toothache and other minor ailments.
Those who did not specify treatment were excluded.

Source: Primary Analyses of the Sri Lankan Demographic Change Project data, 1985 and 1987.

Table 4.6b Type of illnesses for which different treatments were used, by last use in all survey areas, all ages, male and female

Illness group	Hospital	Private doctor	Ayurveda	Magico-religious	Self-treatment
Fever	21.3	29.5	4.0	13.4	25.3
Cold,cough,catarrh	14.7	12.3	12.4	2.7	41.7
Other respiratory diseases	10.6	9.4	7.7	5.3	2.2
Infectious & parasitic disease	6.0	6.1	1.2	6.2	2.4
Intestinal infection	9.5	13.9	8.3	6.0	7.5
Chronic rheumatism	6.2	4.7	31.6	4.5	3.7
Other chronic conditions	2.1	1.8	2.1	2.7	0.2
Skin disease	6.7	5.6	12.4	3.2	2.1
Mental & psychological diseases	0.4	0.2	0.2	29.1	0.1
Accident & injury	4.2	3.4	4.5	3.0	1.6
Female ill-health	3.7	1.6	1.6	7.0	0.2
Disease of circulatory system	4.5	3.5	3.3	2.5	0.4
Nutritional deficiency	1.5	1.9	2.3	4.6	0.3
Fit / convulsion	1.2	1.1	0.0	2.3	0.3
Urinary and bladder complaints	1.1	0.8	0.7	0.2	0.0
Headache	2.6	2.5	7.5	4.5	10.1
Other	3.7	1.7	2.1	2.9	2.0
Total	100.0	100.0	100.0	100.0	100.0
N	1,300	1,475	427	869	1,542

Notes: Other includes toothache and other minor ailments.
Column totals may not add up to 100 due to rounding.

Source: Primary Analysis of the Sri Lankan Demographic Change Project data, 1985 and 1987.

As explained in Chapter 2, illnesses which are caused by humoral imbalance can only be cured by restoring the equilibrium of the humours. The Sinhalese believe that rheumatism cannot be totally cured by modern medicine which treats only the symptoms, whereas Ayurvedic medicine cures the underlying cause of the disease. Many people say that Western medicine `heats', thus disturbing the balance of the humours and causing side effects such as skin rashes and dizziness. This is similar to the belief in many societies. Though not as lucidly stated, our respondents held similar sentiments to those expressed by one of Nichter's respondents in his Indian study:

> `English' medicine and urea (a chemical fertilizer) are both powerful, heating, and harmful after some years of use ... Certainly, they are popular - urea makes crops green overnight and increases yield until one day you find that the earth is hot, acidic, and useless. Injections are like that too. You take them and feel better quickly but later your body turns weak... yes the agricultural extension officer tells us to balance urea with potash and other chemicals and that this will prevent the soil from becoming hot. The doctor tells us to eat good food, drink milk, and take tonic and we will not have after effects from the injections he gives us. But this is not how we live... we don't drink milk or take tonic daily nor do we use fertilizer the way they tell us... this is not our habit - such things are costly and we have other needs (Nichter,1980: 228).

Gould's (1965) observations in rural India similarly suggest that sudden disorders which interrupt people's daily routine and require fast relief were mostly treated by modern health care, while chronic disorders which only partly disrupt their activities were treated by indigenous medicine. Gonzalez (1966), in a Guatemalan study, and Fosu (1988), in a Ghanaian study, concluded that formal health services were used when symptomatic relief was expected and indigenous medicine was necessary to remove the underlying cause of a disease.

Some respiratory diseases including pneumonia and bronchitis, which are also regarded as due to the disharmony of the humours, however, are mostly treated by modern medicine. This is, presumably, because of the seriousness of the symptoms and their need for fast-acting treatment which

it was accepted that only modern medicine could provide. However, it is not in Sri Lanka a matter necessarily of using solely one treatment or another. There is a logical inclination to use modern medicine at the onset of illness to cure the symptoms and then use other forms of treatment to cure the underlying causes.

Magico-religious medicine which is provided by an exorcist, priest, or charmer is mainly used for diseases which are believed to be the result of supernatural influences (see for example Chapter 2, section 2.6). Table 4.6b shows that, in the study areas, magico-religious medicine is mostly used to treat ill-health conditions related to the female reproductive system, mental and psychological diseases, fever, infectious and parasitic diseases, and intestinal disorders. Such diseases can be due either to natural causes, in which case they are treated by either Western or traditional herbal medicine, or to supernatural causes, when they are treated by magico-religious medicine.

The survey found that, of those women who complained of a reproductive-related problem, 43 per cent of respondents had been treated by magico-religious medicine for the loss of a pregnancy or for menstrual disorders. Miscarriages are often seen as being due to the influence of *Kalu Kumara* (`Black Prince'), a demon who fills women with sexual thoughts (Kapferer, 1983: 122). Some women respondents said that pregnant women sometimes dream that a black man enters the bedroom and forces them to have intercourse; subsequently a miscarriage occurs.

Table 4.7 Types of first and successive treatments given for the sick in all survey areas at the time of interview

	First treatment		Second treatment		Third treatment		Fourth treatment	
	N	%	N	%	N	%	N	%
Self-treatment								
(1) Herbs	105	20.0	6	3.1	5	6.4	2	10.5
(2) Modern analgesics	24	4.6	6	3.1	2	2.6	1	5.3
(3) 1 & 2 combined	6	1.1	6	7.7				
	2	0.4						
Modern Medicine								
1) Hospital (free)	192	36.6	54	27.7	16	20.5	7	36.8
2) Western (paid)	131	25.0	77	39.5	21	26.9	3	15.8
Ayurveda	46	8.8	40	20.5	16	20.5	2	10.5
Magical/ritual	4	0.8	9	4.6	11	14.1	4	21.1
Combination	4	0.8	3	1.5	1	1.3		
No treatment	10	2.0						
N	524	100.0	195	100.0	78	100.0	19	100.0

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

The main use of magico-religious treatment is to treat mental and psychological illnesses (see Table 4.6b). Mental and psychological diseases include not only mental illnesses, but also diseases said to be caused by possession and the malign influence of planets. The number of cases of mental and psychological illness in Table 4.6a is too small to allow definite conclusions regarding the treatment of such illnesses. The number of cases is almost certainly underreported, for chronic illnesses such as mental and psychological illnesses are probably not seen as equivalent to acute illnesses requiring immediate treatment. Another reason for the under-reporting of such illnesses is that they are believed to appear at certain times of the month, such as when the moon is full: at other times a person can behave normally attending to daily activities. It is clear from Table 4.5 that magico-religious treatment is rarely a first treatment; however, it is commonly adopted as a subsequent treatment. This indicates that Sri

Lankans attempt to use the fast and inexpensive modern treatment, and only subsequently turn to other methods when this is ineffective. This is in keeping with the Sri Lankan notion that Western medicine treats the symptoms. This is not always effective, in which case it will be necessary to treat the root causes of the illness, in this case supernatural power.

4.6 Demographic and socio-economic differentials in health behaviour

The previous sections of this chapter have shown that the use of a particular type of medicine is influenced by people's cultural perception of the cause of illness; the next section examines whether people's behaviour differs according to their demographic and socio-economic characteristics: whether the treatment of a particular illness varied by age and sex of the patient, and various socio-cultural factors of the family. Age and sex have been selected as demographic variables and the socio-cultural characteristics of the family are measured by place of residence, religion-ethnicity, and education. Religion and ethnicity are treated as equivalent because in Sri Lanka there is a close association between the two: Sinhalese are predominantly Buddhists, Tamils are mostly Hindu and Moors are by definition Islamic.

Studies on medical pluralism in different societies show that cultural concepts of disease and treatment are stronger among the old, rural people, and the less educated. Fosu (1981: 476-478), for example, found that in rural Ghana younger people identified sicknesses in a more scientific way than older people. The difference is largely because the young are more likely to be exposed to modernization through formal education and the opportunities it provides for contact with the outside world. Fosu (1981) also found a slight difference in male and female attitudes in rural Ghana in the use of health facilities. More females than males believed that diseases were due to natural causes. Fosu argues that this was because women,

especially mothers, take care of the sick and are more active in the process of seeking treatments from hospitals and other health facilities and this influences their attitudes. Chen (1981: 132) noted that in Malaysia different ethnic groups' `deep-rooted' beliefs in their own health systems influenced their acceptance of modern medical facilities. Numerous studies have shown that religion and the level of education also influence people's concepts of disease.

Kapferer (1983: 18) found from his work in Sri Lanka that ritualistic cures were used more by peasants and working-class people than middle-class and rich people. He further noted, however, that this was a recent attitude and that 30 to 40 years ago use of such cures was common among the rich. Nevertheless, the middle-class people in Sri Lanka will still `seek the services of a traditional exorcist as a last resort' (Kapferer, 1983: 18).

4.6.1 Demographic variables affecting treatment

4.6.1.1 Effect of age on treatment

As shown in the previous analysis, while modern medicine was used for most diseases, traditional and self-treatments were preferred for selected diseases (see section 4.4). This section looks at the difference, if any, in the way illnesses of patients of different ages and sexes have been treated.

It appears from Table 4.8 that there is little difference in the way the same illness has been treated for persons of different ages. There is slightly more use of modern medicine, either free or purchased, for young children aged up to five years, in the treatment of fever, cold and cough, and worms. The youngest group was less likely to have been given home remedies for colds, coughs, and catarrh. Patients over 45 years are more likely to use private Private doctors for fever and major respiratory illnesses. This may be because the youngest and the oldest groups are known to be a high-risk

group needing quick attention. Self-treatment included both herbal preparations and modern analgesics such as Panadol and Disprin. Most self-treatment for fever, cold/cough/catarrh, and diarrhoea involved the use of herbal preparations. For fever, 249 people used self-treatment of which 70.7 per cent (N=176) used herbs only, 20.9 (N=52) used analgesics and 8.4 (N=21) used herbs and analgesics combined. Of 332 people who treated themselves for colds, cough, and catarrh, 78 per cent used herbs, 17.8 analgesics and 4.2 per cent both types. Of the 58 people whose first treatment for diarrhoea was self-treatment, 91.4 per cent had used herbs only while a mere 1.7 per cent used analgesics alone. Interestingly, the data indicated that the young children were less likely to be given analgesics than adults.

The most common home treatments recorded for diarrhoea patients in the survey were lime juice, tea, coconut juice and other herbs. The use of rice gruel[4] as a treatment was I believe under-recorded, apparently because rice gruel is given as the regular meal during diarrhoea, and is not perceived as a treatment, it being believed that diarrhoea patients cannot digest normal meals.

Ayurveda is mostly used by the elderly people, partly because the illnesses for which it is held to be most suitable are illnesses of the elderly, for example rheumatism. An exception to this generalization is skin rashes which mainly occur among younger children; for these disorders Ayurvedic medicine is felt to be particularly efficacious.

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4 This is made by cooking roasted or unroasted rice in water and salt; it is then pulped into a paste and dissolved in the liquid.

Table 4.8 Percentage distribution showing illness and treatment of last person sick by age group, in all survey areas.

Illness group	Age (years)	Hospital (free)	Western (paid)	Ayurveda	Self treatment	Magico/ religious	Both modern & traditional	Total	N
Fever	0-5	25.4	31.9	1.4	39.1	0.7	0.7	100.0	138
	6-14	21.8	31.5	0.0	46.0	0.8	0.0	100.0	124
	15-24	17.6	21.6	0.0	58.8	2.0	0.0	100.0	102
	25-44	19.0	27.0	1.0	53.0	0.0	0.0	100.0	100
	45 +	16.9	37.3	1.7	42.4	0.0	1.7	100.0	59
Cold/cough/ catarrh	0-5[a]	18.3	17.4	1.7	60.0	0.0	0.9	100.0	115
	6-14	14.6	13.5	1.1	68.5	0.0	1.1	100.0	89
	15-24[b]	14.1	10.6	3.5	70.6	0.0	0.0	100.0	85
	25-44	12.9	12.1	3.4	69.8	1.7	0.0	100.0	116
	45 +	11.5	6.4	3.8	76.9	0.0	1.3	100.0	78
Diarrhoea/ stomach upset	0-5	25.5	33.3	2.0	39.2	0.0	0.0	100.0	51
	6-14	40.9	13.6	4.5	40.9	0.0	0.0	100.0	22
	15-24	14.8	51.9	0.0	33.3	0.0	0.0	100.0	27
	25-44	16.1	38.7	6.5	38.7	0.0	0.0	100.0	37
	45+	33.3	25.0	8.3	33.3	0.0	0.0	100.0	24
Wounds and accidental injury	6-14	54.5	9.1	0.0	36.4	0.0	0.0	100.0	11
	15-24	50.0	25.0	0.0	25.0	0.0	0.0	100.0	12
Rheumatism and body pains	15-24	35.7	7.1	35.7	14.3	7.1	0.0	100.0	14
	25-44	21.4	28.6	21.4	28.6	0.0	0.0	100.0	28
	45+	21.1	12.3	29.8	36.8	0.0	0.0	100.0	57
Worms	0-5	25.0	55.6	2.8	16.7	0.0	0.0	100.0	36
	6-14	34.6	26.9	0.0	38.5	0.0	0.0	100.0	26
Chest pain	25-44	41.7	50.0	0.0	8.3	0.0	0.0	100.0	12
	45+	38.5	46.2	7.7	7.7	0 .0	0.0	100.0	13
Other respiratory illnesses	0-5	40.0	32.5	2.5	20.0	2.5	2.5	100.0	40
	6-14	33.3	41.7	0.0	20.8	4.2	0.0	100.0	24
	15-24	23.8	52.4	4.8	19.0	0.0	0.0	100.0	21
	25-44	15.8	57.9	5.3	15.8	5.3	0.0	100.0	19
	45+	19.0	61.9	0.0	19.0	0.0	0.0	100.0	21
Skin rashes	0-5	35.7	28.6	21.4	14.3	0.0	0.0	100.0	14
	6-14	17.6	52.9	0.0	23.5	5.9	0.0	100.0	17
	15-24	58.3	25.0	8.8	8.3	0.0	0.0	100.0	12

Note: Only those illnesses reported by 10 or more people are included in Table.
Rural refers only to Loluwagoda as the question was not asked in Bondupitiya.

a Two (1.7%) children were not given any treatment.

b One person (1.2%) did not receive any treatment.

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

The age of the person is not a strong factor in determining the type of treatment used, rather it is the type of illness and the perceived cause of that particular illness that decide the appropriate treatment.

4.6.1.2 Sex differentials in treatment

Sex differentials in treatment exist in many South Asian societies, a fact primarily attributed to male preference. Miller (1981: 99-101) found in North India that families were more likely to take boys to a hospital. Murthy (1981: 78-80) and Chatterjee (1984: 21-26) also reported for India that males of all ages were more likely than girls to be taken for treatment. Rahaman et al. (1982: 1124) noted that in Bangladesh, while girls and boys suffering from diarrhoea were equally taken to a health centre if the centre was nearby, as the distance increased, the proportion of girls taken for treatment declined markedly. Langford and Storey (1993: 275-276) have reported that such differentials existed in Sri Lanka in the past but seem to have disappeared. They attribute this to the former prevalence of hookworm and malaria, diseases which they argue afflicted women to a greater degree than men, owing to the diseases' association with anaemia.

Detailed analysis of sex differentials in treatment is not possible with SLDCP data because of insufficient numbers, but it is nevertheless possible to see if more males' than females' illnesses are reported and whether more males are taken to private medical care. It is also possible to examine whether there are any differences in the treatment of illnesses by sex (Table 4.9).

The SLDCP data do not suggest that respondents are more inclined to report illnesses of males than females. Indeed, marginally fewer males than females were reported as sick: 49 per cent of men and 51 per cent of women (Table 4.9). Slightly more males than females under age five were reported as having been sick in the recent past: 52.8 per cent males as against 47.2

per cent females (Table 4.10). Neither figure implies a sharp difference regarding attention given to illness of boys compared to girls.

While the numbers are small, male children under five seem to have been slightly more likely than females to receive modern treatments for the same illness, but the overall differences are not significant (see Table 4.10). While differentials in total treatment by sex seem minor there are some significant differences in the treatment for specific illnesses by sex. Females are more likely than males to receive Ayurvedic treatment, possibly because since most women live at home and work close by they are more able to follow the various dietary regimes and other behavioural changes required when taking Ayurvedic treatment than men who often work far from home. Self-treatment, except for chest pain and skin disease, is more often used by men. This does not mean that men take their own home-made herbal preparations; the preparations are usually undertaken by the women. Self-treatment is easy nowadays with mixed herb packets available in any retail store. Adult males also use a lot of analgesics before seeking treatment as they are employed away from home and find it hard to go to free medical care.

Table 4.9 Percentage distribution in treatment of illnesses of last sick person in household by sex in all survey areas, all ages.

Illness group	Sex	Hospital (free)	Private (paid)	Ayurveda	Self-treatment	Magico-religious	Both modern & traditional	N
Fever	M	19.2	29.8	0.8	49.0	1.2	0.0	245
	F	22.3	29.1	0.7	46.4	0.4	0.7	278
Cold/cough/ catarrh	M[a]	12.4	13.4	2.3	70.0	0.0	0.5	217
	F[b]	16.5	11.6	3.0	67.0	0.7	0.7	267
Diarrhoea	M	26.8	28.2	2.8	42.3	0.0	0.0	71
	F	23.8	38.1	4.8	33.3	0.0	0.0	84
Wounds & accidental injury	M	41.4	17.2	10.3	31.0	0.0	0.0	29
	F	50.0	27.8	5.6	16.7	0.0	0.0	18
Rheumatism & body pains	M[b]	18.9	27.0	16.2	35.1	0.0	0.0	37
	F	29.3	12.0	29.3	26.7	2.7	0.0	75
Worms	M	35.3	38.2	0.0	26.5	0.0	0.0	34
	F	21.6	48.6	2.7	24.3	2.7	0.0	37
Chest pain	M	21.4	71.4	7.1	0.0	0.0	0.0	14
	F[c]	43.5	30.4	0.0	17.4	0.0	0.0	23
Other respiratory	M	30.4	43.5	2.2	19.6	2.2	2.2	46
	F	27.8	48.1	2.5	19.0	2.5	0.0	79
Skin disease	M	33.3	50.0	3.3	10.0	3.3	0.0	30
	F	40.0	16.0	20.0	24.0	0.0	0.0	25
Malnutrition	M	36.4	27.3	0.0	27.3	9.1	0.0	11
	F	14.3	66.7	9.5	4.8	4.8	0.0	21

Note: Only those illnesses reported by 10 or more people included in Table.
Row totals add up to 100.

a Three persons were not given any treatment.
b One person was not given any treatment.
c Two females received no treatment.

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

Table 4.10 Numbers[a] and proportions of commonly reported illnesses of children aged five and under, by type of first treatment and sex of the child, in all survey areas.

Illness group	Sex	Hospital (free)	Private (paid)	Ayurveda	Self-treatment	Other[b]	Total
Fever	Male	26.9	34.6	2.6	34.6	1.3	100.0
		(21)	(27)	(2)	(27)	(1)	(78)
	Female	23.3	28.3	0.0	45.0	3.4	100.0
		(14)	(17)		(27)	(2)	(60)
Cold/cough/catarrh	Male	19.0	23.8	1.6	52.4	3.2	100.0
		(12)	(15)	(1)	(33)	(2)	(63)
	Female	17.3	9.6	1.9	69.2	1.9	100.0
		(9)	(5)	(1)	(36)	(1)	(52)
Diarrhoea	Male	21.4	35.7	0.0	42.9	0.0	100.0
		(6)	(10)		(12)		(28)
	Female	30.4	30.4	4.3	34.8	0.0	100.0
		(7)	(7)	(1)	(8)		(23)
Worms	Male	33.3	50.0	0.0	16.7	0.0	100.0
		(6)	(9)		(3)		(18)
	Female	16.7	61.1	5.6	16.7	0.0	100.0
		(3)	(11)	(1)	(3)		(18)
Other respiratory illnesses	Male	40.0	40.0	0.0	13.3	6.7	100.0
		(6)	(6)		(2)	(1)	(15)
	Female	40.0	28.0	4.0	24.0	4.0	100.0
		(10)	(7)	(1)	(6)	(1)	(25)
All illnesses	Male	26.3	32.9	1.8	37.3	1.8	100.0
		(60)	(75)	(4)	(85)	(4)	(228)
	Female	25.0	32.9	3.4	41.2	4.4	100.0
		(51)	(53)	(7)	(84)	(9)	(204)

Note: a The number of children are given in parentheses.
b Owing to small numbers modern/traditional combination, and magico-religious treatment are not included here.

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

4.6.2 Socio-cultural differentials

4.6.2.1 Place of residence and treatment

Tables 4.11, 4.13 and 4.14 examine socio-cultural differences in the treatment of illness in the survey areas. The results are on occasion highly correlated as several of the socio-cultural variables used in the analysis are directly related. The treatments of illnesses by residence in Table 4.11 indicate that health concepts vary slightly by place of residence. Self-treatment for minor respiratory diseases (cold, cough and catarrh) is common among the urban middle-class, rural and estate populations but not in the urban poor areas where home-prepared herbal medicines were little used (see Table 4.12). One reason for this as discussed earlier, is that urban poor areas have easy access to hospitals where medicine is available free of charge. Nevertheless it is significant that when cross-tabulated by religion most of those who use self-treatment in urban poor areas are Buddhists, that is Sinhalese.

Table 4.1 at the beginning of this chapter indicates that reported cases of respiratory diseases were comparatively infrequent in the poor urban areas. As noted earlier this may reflect under-reporting by respondents disregarding minor respiratory disease as not being worthy of treatment. This lack of treatment may, however, show up in the urban poor areas' reported high levels of bronchitis. In Table 4.11 there are 40 children aged five years and under who have been treated for `other respiratory illnesses'. Of them, 20 children had bronchitis, 16 of whom were from the poor. Another 20 had suffered from such illnesses as pneumonia, asthma and tonsillitis, of whom 13 were from the poor. The higher reporting of minor respiratory illnesses in Sinhalese areas is I believe an indication that they are being treated, usually with herbal medicines.

Table 4.11 Percentage distribution showing how illnesses are treated in different survey areas.

Illness group	Area	Hospital (free)	Western (paid)	Ayurveda	Self-treatment	Magico-religious	Both modern & traditional	Total	N
Fever	UMC	7.5	29.9	0.5	61.5	0.5	0.0	100.0	187
	U.Poor	31.2	31.2	1.0	34.2	1.5	1.0	100.0	199
	Rural	21.8	27.6	1.1	49.4	0.0	0.0	100.0	87
	Estate[a]	28.0	24.0	0.0	46.0	0.0	0.0	100.0	50
Cold/cough/ catarrh	UMC	9.2	15.8	3.1	71.9	0.0	0.0	100.0	196
	U.poor[b]	30.0	14.5	3.6	48.2	0.9	0.9	100.0	110
	Rural[a]	9.9	9.9	1.8	75.7	0.9	0.9	100.0	111
	Estate[a]	13.4	3.0	1.5	79.1	0.0	1.5	100.0	67
Diarrhoea	UMC	17.6	45.1	5.9	31.4	0.0	0.0	100.0	51
	U.Poor	30.9	32.7	1.8	34.5	0.0	0.0	100.0	51
	Rural	18.8	25.9	3,7	51.9	0.0	0.0	100.0	27
	Estate	36.4	18.2	4.5	40.9	0.0	0.0	100.0	22
Wounds & accidental injury	UMC	38.9	16.7	0.0	44.4	0.0	0.0	100.0	18
	U.Poor	50.0	25.0	0.0	25.0	0.0	0.0	100.0	12
	Rural	50.0	14.3	28.6	7.1	0.0	0.0	100.0	14
Rheumatism & body pains	UMC	27.0	24.3	29.7	18.9	0.0	0.0	100.0	37
	U.Poor	23.3	16.7	13.3	36.7	0.0	6.7	100.0	30
	Rural	24.1	13.8	34.5	27.6	0.0	0.0	100.0	29
	Estate	31.3	6.3	18.8	43.8	0.0	0.0	100.0	16
Worms	UMC	12.5	58.3	4.2	20.8	4.2	0.0	100.0	24
	U.poor[a]	44.0	36.0	0.0	20.0	0.0	0.0	100.0	25
	Rural	20.0	33.3	0.0	46.7	0.0	0.0	100.0	15
Other respiratory illnesses	UMC	23.8	59.5	4.8	11.9	0.0	0.0	100.0	42
	U.Poor	29.2	38.5	1.5	24.6	4.6	1.5	100.0	65
	Rural	9.1	63.6	0.0	27.3	0.0	0.0	100.0	11
Skin rashes	UMC	29.2	45.8	4.2	20.8	0.0	0.0	100.0	24
	U.Poor	44.4	33.3	5.6	16.7	0.0	0.0	100.0	18

Note: UMC = Urban middle-class U.poor = Urban poor.
Only those illnesses reported by 10 or more people included in Table.
Since the question was not asked in Bondupitiya, rural refers only to Loluwagoda

a One person was not given any treatment.

b Two persons were not given any treatment.

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 & 1987.

In the treatment of the currently sick, estate people largely used self-treatment but (as seen in Table 4.11 on the treatment of persons who were sick in the recent past, but had recovered by the time of the survey) in general, estate people had used hospital treatment. The difference in the two instances may be due to the nature of the illnesses reported at the time of the survey: most were minor illnesses. While minor illnesses reported at the time of the survey are treated using home medicine in the estate, those illnesses which are regarded as serious are taken to hospital or even to private doctors; see for example fever and other respiratory illnesses.

Although the poor residents made relatively little use of self-treatment, the survey found that most urban poor residents, particularly Muslims, kept Vicks[5] and balms in their houses (see Appendix 4.3). Table 4.11 indicates that the urban poor use self-treatment for many diseases, although less than other respondents. However, only 25 per cent of the respondents in the urban poor areas exclusively used herbs, 7 per cent used only analgesics, and a further 1 per cent used both herbs and analgesics (see Table 4.12). Among the urban poor residents the majority using herbal self-treatment is Sinhalese and a smaller proportion is Tamil. Of the 150 urban poor respondents who solely used herbs only 42 per cent were Muslims, and of the 39 respondents whose self-treatment consisted solely of analgesics 90 per cent were Muslims (see Table 4.12).

Over 50 per cent of the users of magico-religious treatment were from urban poor areas with the estate population being the second largest users. This is closely related to the religious composition of these areas: Muslims and Hindus often invoke vows to gods, a comparatively inexpensive form of magico-religious treatment. Urban poor residents used magico-religious treatments mainly to treat young children for fever and respiratory

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5 `Vicks Vapo-Rub' which is used as an inhalant for nasal congestion.

illnesses. Estate people use magico-religious treatment for infectious and parasitic diseases.

Table 4.12 Percentage distribution of types of self-treatment used for the last sick person as the first treatment in grouped survey areas

Type of medicine	Urban middle-class	Urban poor	Rural areas	Estate
Herbs only	34.0 (222)	25.3 (150)	45.4 (157)	32.7 (68)
Modern analgesics	9.5 (62)	6.6 (39)	4.0 (14)	12.5 (26)
Both types	4.1 (27)	1.2 (7)	0.3 (1)	1.9 (4)
Total no. treated with all treatments	652	593	346	208

Note: Since other treatment types are not included column totals do not add up to 100 per cent.

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

Ayurveda is more favoured by the urban middle-class and rural residents. There is a substantial use of Ayurvedic medicine for rheumatism in all areas. Rural residents use Ayurvedic medicine for wounds and accidental injuries such as fractures. However, the most common form of treatment in all areas was modern medicine.

The treatment of illnesses adopted by people is affected by the type of practitioner it is easiest for them to consult. For urban people the local Private doctor is convenient whereas for a villager it is often easier to go to the nearest priest or `native doctor' for advice. This is partly because the hospitals have set hours, whereas the private clinics have flexible hours, which enable their use when it is convenient for the patients. Ayurvedic medical practitioners do not have flexible hours, and as mentioned earlier, prescribe various behavioural regulations which are inconvenient to use regularly. Education and affordability are important influences too.

Hospital treatment is provided free of charge, whereas other treatments such as Ayurveda and magico-religious treatment can be costly.

4.6.2.2 Effect of religion on treatment

Table 4.13 indicates that the treatment for particular illnesses differs by religion. Muslims are much less likely to use Ayurveda and self-treatment for illnesses. Although Table 4.13 indicates that the main group that used magico-religious treatment is Buddhists (Sinhalese), overall it was the Muslims and Hindus who were most likely to use magico-religious treatments. This is shown by the proportions of respondents who employed magico-religious treatment as the first treatment for the last sick persons in the household: Buddhists 3.7 per cent, Hindus 5.6 per cent, Muslims 9.2 per cent, and Christians 3.5 per cent. The numbers are too small, however, to provide statistical certainty. Hindus believe that infectious diseases such as mumps, measles, smallpox and chickenpox are caused by the goddess Mariamma. The Sinhalese Buddhists hold similar beliefs, but nevertheless most Sinhalese in both rural and urban middle-class areas sought modern treatment for such illnesses. These figures are not included in Table 4.13 owing to insufficient numbers.

Nevertheless, the data may reflect the strong influence of Islam and Hinduism on people's daily lives. It may also reflect differences in the nature of the magico-religious treatments. The magico-religious treatments used by the Muslims, for instance, tend to be prayers to God, which are inexpensive, and easily performed, in comparison to the very elaborate magico-religious treatments used by the Sinhalese such as *thovil* (`devil' dancing).

Table 4.13 Percentage distribution of treatments used for selected illnesses of last sick person in a household by religion.

Illness group	Religion	Hospital (free)	Western (paid)	Ayurveda	Self-treatment	Magico-religious	Both modern & traditional	N
Fever	Buddhist[a]	16.6	30.5	1.2	50.8	0.3	0.3	325
	Hindu	43.5	19.6	0.0	37.0	0.0	0.0	46
	Muslim	35.1	28.6	0.0	32.5	2.6	1.3	77
	Christian	10.8	32.4	0.0	55.4	1.4	0.0	74
Cold/cough/ catarrh	Buddhist[a]	12.5	12.1	2.8	70.8	0.7	0.7	281
	Hindu	18.5	5.6	0.0	74.1	0.0	1.9	54
	Muslim[b]	26.8	15.5	2.8	52.1	0.0	0.0	71
	Christian[a]	9.2	13.2	3.9	72.4	0.0	0.0	76
Diarrhoea	Buddhist	22.4	35.5	5.3	36.8	0.0	0.0	76
	Hindu	33.3	14.3	4.8	47.6	0.0	0.0	21
	Muslim	35.1	35.1	2.7	27.0	0.0	0.0	37
	Christian	9.5	42.9	0.0	47.6	0.0	0.0	21
Wounds & accidental injury	Buddhist	44.8	17.2	10.3	27.6	0.0	0.0	29
Infectious diseases	Buddhist	18.2	18.2	0.0	45.5	9.1	9.1	11
Rheumatism & body pains	Buddhist	29.0	14.5	33.3	23.2	0.0	0.0	69
	Hindu	21.4	7.1	21.4	50.0	0.0	0.0	14
	Muslim	23.1	23.1	7.7	38.5	7.7	0.0	13
	Christian	18.8	31.3	6.3	31.3	6.3	6.3	16
Worms	Buddhist	20.0	45.0	2.5	30.0	2.5	0.0	40
	Muslim	58.3	8.3	0.0	33.3	0.0	0.0	12
	Christian	18.2	63.6	0.0	18.2	0.0	0.0	11
Chest pain	Buddhist[b]	37.5	37.5	4.2	12.5	0.0	0.0	24
Other respiratory illnesses	Buddhist	24.6	50.8	4.9	18.0	1.6	0.0	61
	Hindu	61.5	23.1	0.0	7.7	0.0	7.7	13
	Muslim	25.8	41.9	0.0	25.8	6.5	0.0	31
	Christian	20.0	25.0	0.0	55.0	0.0	0.0	20
Skin disease	Buddhist	25.8	45.2	12.9	12.9	3.2	0.0	31
Malnutrition	Buddhist	14.3	57.1	7.1	14.3	7.1	0.0	14

Note: Only those illnesses reported by 10 or more people included in Table.
Row totals add up to 100 percent.
a One person was not given any treatment.
b Two persons were not given any treatment.

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

4.6.2.3 Education and the use of treatment

Table 4.14 reports treatments used for different diseases classified by education. Generally, educated people receive modern treatment, often from private Western doctors, while those with low education received free hospital treatment. This is, as discussed earlier, a matter of convenience and also shows a socio-economic difference in people's ability to afford health treatment. The more educated are likely to have jobs and do not have time to go to hospitals, but can go to the private clinics where opening times are flexible. The most educated were also from the middle class areas and could afford the cost of private treatment.

The more educated used self-treatment for fever and minor respiratory illnesses. This may be as much an indication of early detection and treatment as of a particular preference for this type of medicine. At the lowest and highest educational levels diarrhoea was treated with home made medicine, but at the middle level of education self-treatment was less used. For other respiratory illnesses the educated used private modern medicine while the less educated used self-treatment and modern hospital medicine.

A comparison of the treatment of illnesses by education is limited in this table by small numbers, but, overall, education does not seem to greatly affect the way people treat illnesses. The main difference is that the educated tend to attend private fee-paid clinics rather than hospitals where medicine is available free of charge. The educated are probably more able to pay for medicine, but more importantly it is easier to discuss the health problem and the treatment with a private doctor than with a doctor at a hospital.

Table 4.14 Percentage distribution of treatment for specific illnesses by education of the respondent, all survey areas.

Illness group	Education (in years)	Hospital (free)	Private (paid)	Ayurveda	Self-treatment	Magico/ religious	Both modern & traditional	N
Fever	0-6	30.1	25.9	0.9	42.1	0.9	0.0	216
	7-9	5.3	33.3	0.0	61.3	0.0	0.0	75
	10+	9.3	28.9	0.0	59.8	1.0	1.0	97
Cold/cough/ catarrh	0-6[a]	16.0	11.5	3.0	66.5	0.5	1.0	200
	7-9	16.2	5.9	1.5	76.5	0.0	0.0	68
	10+	5.7	13.2	3.8	76.4	0.9	0.0	106
Diarrhoea	0-6	32.8	23.4	4.7	39.1	0.0	0.0	64
	7-9	26.7	40.0	6.7	26.7	0.0	0.0	15
	10+	4.2	54.2	4.2	37.5	0.0	0.0	24
Wounds and accidental injury	0-6	54.5	22.7	9.1	13.6	0.0	0.0	22
	7-9	30.0	30.0	20.0	20.0	0.0	0.0	10
Worms	0-6	30.0	23.3	3.3	40.0	3.3	0.0	30
Chest pain	0-6[b]	50.0	28.6	7.1	7.1	0.0	0.0	14
	7-9	27.3	54.5	0.0	18.2	0.0	0.0	11
Other respiratory illnesses	0-6	25.0	44.2	3.8	23.1	3.8	0.0	52
	7-9	26.3	57.9	0.0	15.8	0.0	0.0	19
	10+	8.3	83.3	0.0	8.3	0.0	0.0	12
Skin diseases	0-6	33.3	37.5	4.2	20.8	4.2	0.0	24
Malnutrition	0-6	36.4	45.5	0.0	18.2	0.0	0.0	11
Heart ailment	0-6	90.0	10.0	0.0	0.0	0.0	0.0	10

Notes: Only those illnesses reported by 10 or more people included in Table.
In the case of children education refers to the education of the mother.
Row totals add up to 100 percent.
a Two persons were not given any treatment.
b One person was not given any treatment.

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

There was a close relationship between the socio-cultural variables as the low-country people mainly belonged to the same ethnic and religious groups. The urban poor were predominantly Muslims, with some Tamil Hindus and a small proportion of Sinhalese Buddhists. In the rural areas the people were Sinhalese Buddhists, in middle-class areas most people were Sinhalese Buddhists with a sizeable proportion of Christians, most of whom were Sinhalese. In the estate the population was predominantly Tamil Hindu.

The Moors and the estate Tamils, most of whom had little education and were poor, were the least likely to use private medical facilities. Because of a certain homogeneity in the survey areas, and on occasion insufficient numbers of the minority communities, comparisons by socio-cultural characteristics within each area are not always possible. Nevertheless, a comparison of the communities reveals interesting cultural differences in health-care behaviour. Many Muslims believe that women should not be educated. Although the survey suggests that inadequate access to schools is a factor in the low levels of education in the estates, it is probably also true that there is less demand among the Indian Tamil community as a whole than among the Sinhalese or Sri Lankan Tamils. This may be partly because education does not promise them any prospect for advancement in the estate sector; to become a tea picker or an estate labourer does not require education. The low-country people perceive their children quite differently. Education is seen as a useful skill in itself even if it does not lead to a highly paid job, in that it is an entry into a new world which requires such skills as reading a telegram or a medical prescription[6] or filling in application forms for jobs in the Middle East.

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6 For modern medicine one does not need to be able to read a prescription as the chemist does the reading but one should be able to read the label on the medicine packet to know when and how much medicine should be administered. When people use Ayurvedic medicine, the prescription is the only information on medicine and the dosages which should be taken, how long it should be boiled, how much should be given

Similarly, Moors seem more likely to neglect their children's minor illnesses thus allowing them to develop into something more serious. The slight use of self-treatment by herbs is an indication that Moors delay the treatment of such illnesses, when the others would treat them. The use of magico-religious treatment for faith healing appears also to be a practice of the Muslims and the Hindus.

4.7 Health seeking process in Sri Lanka

The analysis so far indicates that while the concepts of illness causation influence the treatment used by the respondents in the SLDCP Survey, modern medicine has been the dominant type used. Even illnesses which are attributed to humoral imbalance such as rheumatism and skin diseases were treated with modern medicine. This is affected by the fact that the analysis of treatments referred to first treatments used by the respondents. I have already argued above concerning Table 4.2b, that people's preference for the treatment for certain illnesses is influenced by traditional health concepts.

Once someone is identified as sick, immediate action should be taken to reduce the danger. In many societies this is not done. In South India, for example, even when a person has been identified as sick, treatment is often delayed because people do not want to interfere with the `punishment of the gods' and thereby provoke them (Caldwell, Reddy and Caldwell, 1983: 193). The SLDCP, however, found in Sri Lanka that 98 per cent of those who were sick at the time of the interview had been given some form of treatment. In the urban middle-class and in the estate areas 100 per cent of the sick had already received some form of treatment at the time of the survey, while 2.6 per cent of the rural sick and 4 per cent of the sick among the urban poor

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to a patient, and how often. Women are the ones who prepare such medicines and it is very useful if they can read.

had not received any treatment. However, most cases not receiving treatment were older people with colds and chronic conditions such as rheumatism.

The survey findings emphasized the quick action and continuous evaluation of Sri Lankans in regard to illness. Of the 98 per cent of the currently sick who were receiving treatment at the time of the survey, 37 per cent had already changed to a second treatment and 15 per cent of this group had sought a third treatment. For the currently sick who had received treatment, 61 per cent had had modern medicine as the first treatment while 26 per cent had used self-treatment. People were very much aware whether treatment was working or not: this is usually not decided by a doctor, but by the patient or by parents in the case of children. When the treatment appeared not to be effective there was no hesitation in trying another doctor or even a completely different type of treatment. The health-seeking process will be explored further through the use of flow-charts. The analysis is restricted to those who have recovered from illness so that the entire course of treatment can be examined. This may, however, result in an understating of the treatment of chronic illnesses from which many people never fully recover, and which are likely to be treated with Ayurvedic and magico-religious cures.

Flow-charts 1 and 2 show the treatments given for the most commonly reported illnesses, fever and cold/cough/catarrh. Fever is normally treated either by modern or by self-treatment, usually herbs. The cure rate for modern treatment is much higher and most subsequent treatment is modern. Colds are usually treated by self-treatment and if this is unsuccessful by modern treatment. The success of treatment is, of course related not simply to its efficacy, but also to the seriousness of the illness. Early self-treatment probably reveals more concern or awareness of illness than any aversion to modern medicine. On average, home treatments

continue for three days, before treatment is sought from a formal health service. Modern medicine is used for about seven days before change to an another treatment. If the treatment is not `successful' other treatments will then be sought.

The previous sections of this chapter showed that the single most frequently used treatment for most illnesses is modern medicine. This, however, understates the importance of Ayurvedic medicine. While formal use of Ayurvedic medicine is slight, as Table 4.7 shows, most self-treatment consists of herbs[7] which are a form of Ayurvedic treatment. Indeed the very diet of most patients also forms part of Ayurvedic treatment as a continuing process in which modern treatments form isolated events. However, this is not how the situation is perceived by Sri Lankans; they see the various treatments adopted as mutually reinforcing each other. The importance of Ayurvedic medicine is also understated by restricting the analysis to illnesses that have been cured. Where other treatments have failed Sri Lankans generally turn to Ayurvedic treatments in an attempt to cure the underlying disease and to reduce the suffering of the patient.

Colds and coughs are regarded as particularly suited to Ayurvedic herbal self-treatments, partly because they are not very serious, and partly because their symptoms such as phlegm are regarded as being symptomatic of a body which is not in proper balance. For chronic illnesses Ayurvedic treatment and home-made medicine are particularly common: see Flow-chart 3 on chronic diseases, where 52 per cent of the patients have been cured by Ayurvedic and home medicine. As most chronic illnesses are never fully cured this table understates the number of people suffering from such illnesses.

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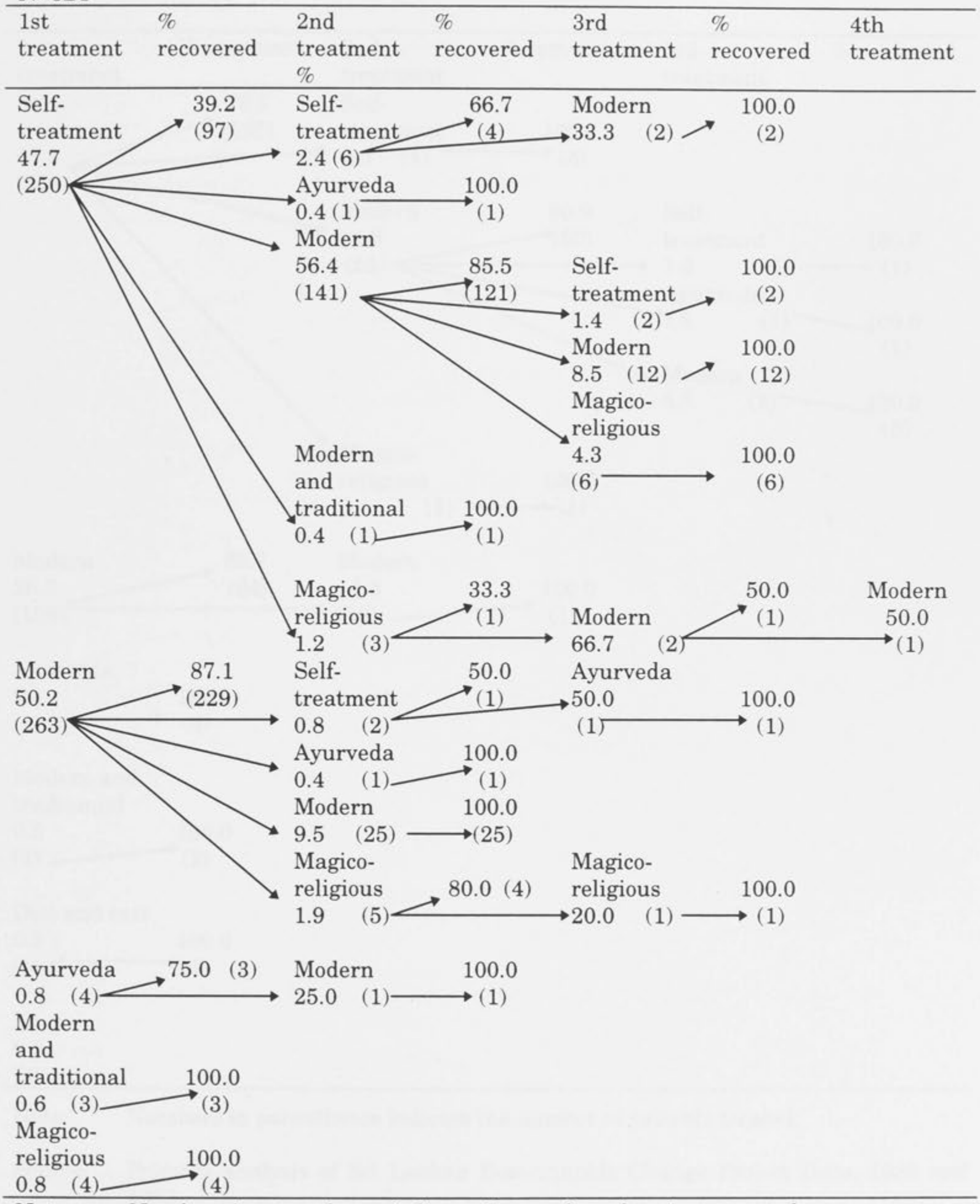
7 Unfortunately it was not possible to distinguish in the analysis between herbs and modern analgesics for past treatments.

Flow-chart 1 Order and nature of treatment of fever

N=524

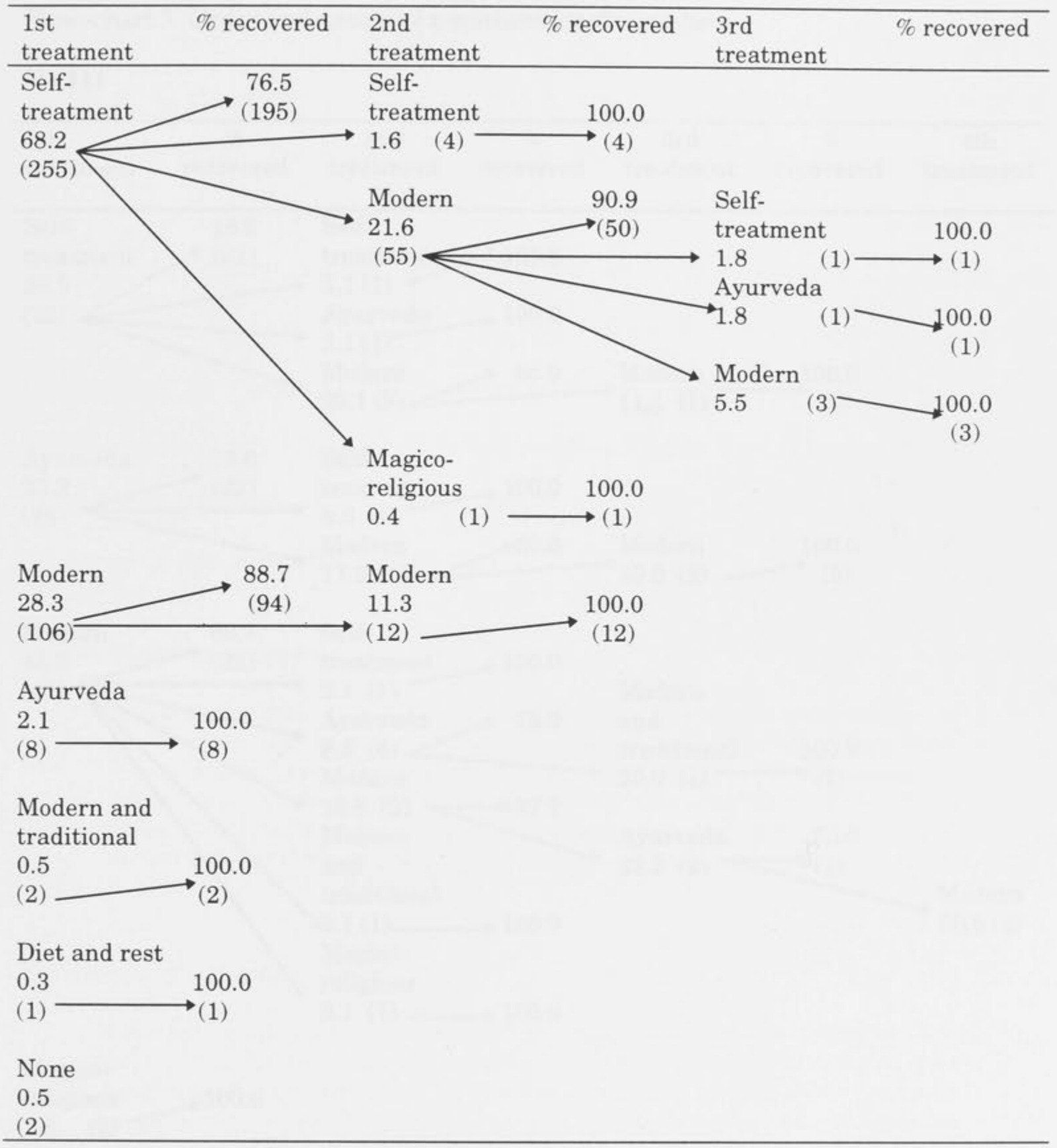


Note: Numbers in parentheses indicate the number of patients treated.

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

Flow-chart 2 Order and nature of treatment for cold/cough/catarrh

N=374

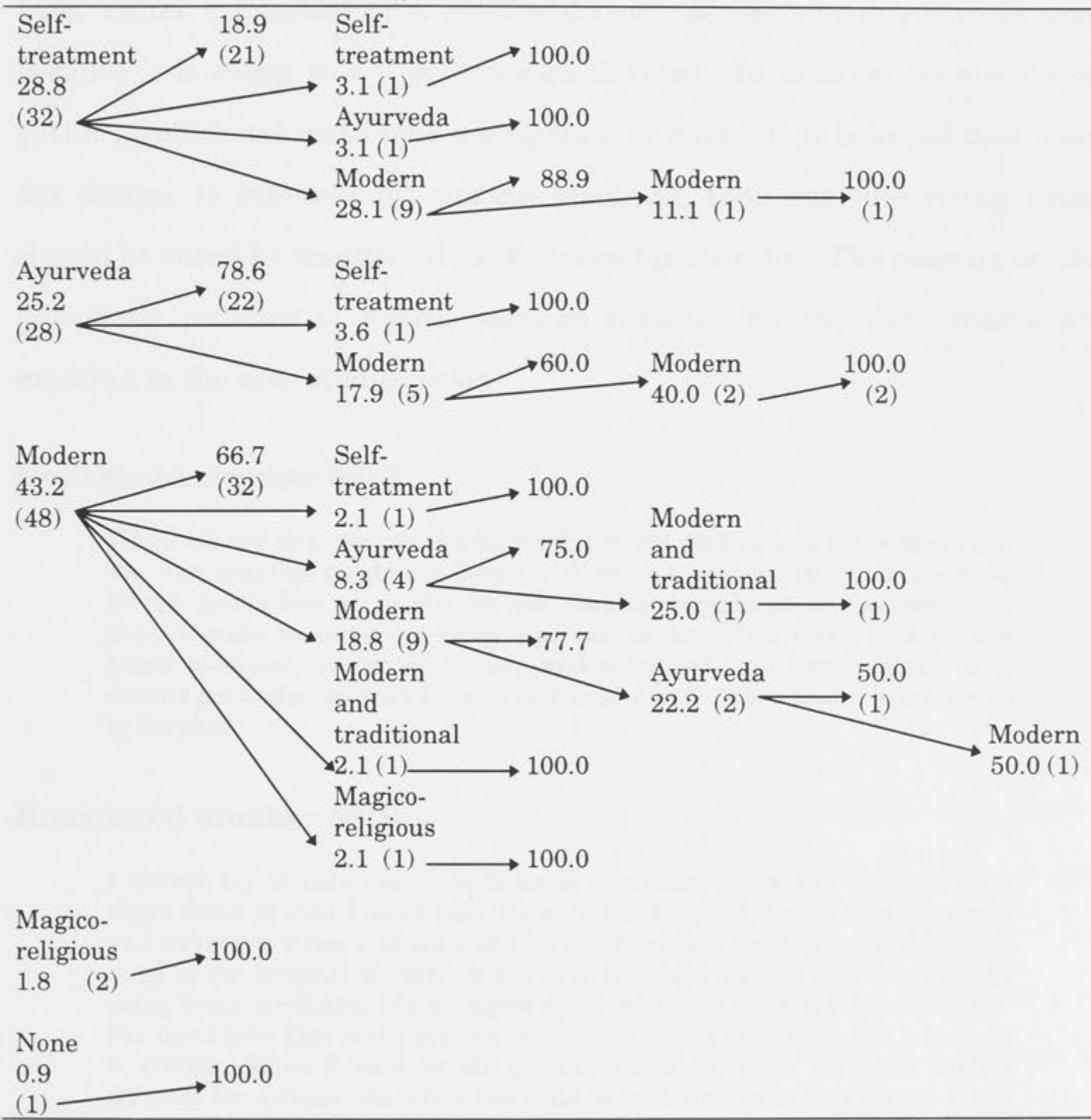


Note: Numbers in parentheses indicate the number of patients treated.

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

Flow-chart 3 Order and nature of treatment for rheumatism

N= 111



Note: Numbers in parentheses indicate the number of patients treated.

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

It is a common practice among Sri Lankans to use self medication first as it may be some time before it is possible to see a doctor. People learn of appropriate self-treatments from their parents or from former experience of similar disorders. People then usually turn to modern health care, either a hospital or a private doctor. Modern health care is used because it is cheap, and it provides quick relief. In contrast, as mentioned earlier, traditional cures take a long time to work. It is believed that, once the danger is removed by modern medicine, then the underlying cause should be cured by traditional medicine and proper diet. The reasons for the pluralistic practice of health services revealed by the flow charts are explored in the case studies below:

Household number 3012

> When we are sick, we use the hospital, private doctors and home medicine. We like hospital treatment because it doesn't cost anything. If we have fevers, headaches or coughs we get hospital treatment. If the treatment doesn't make us better we go to a private doctor. With fever, first we use home medicine, coriander water, *pathpadagam*[8] and *wenivelgeta*[9]; if it doesn't get better we take Disprin or Panadol and if that doesn't work we go to hospital.

Household number 3019

> I always try to cure illness with home medicine. When the children have slight fever or cold I don't take them to the hospital, I give them Panadol and coriander water and put some ice on the child's head. It is very difficult to go to the hospital always. In any case the children will soon be cured by using home medicine. My youngest child is always suffering from asthma. For this I take him to the private doctors because it is serious. But I don't do it always. When I went to the private doctor he gave me some tablets suitable for asthma. So when the child is suffering from this illness I buy these tablets from the pharmacy.

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8 *Pathpadagam* is made by drying a plant called prickly nightshade; the botanical term is *solanum jacquini* (Carter, 1924).

9 The botanical name for *Wenivelgeta* is *coscinium fenestratum* (Carter, 1924).

Household number 3023

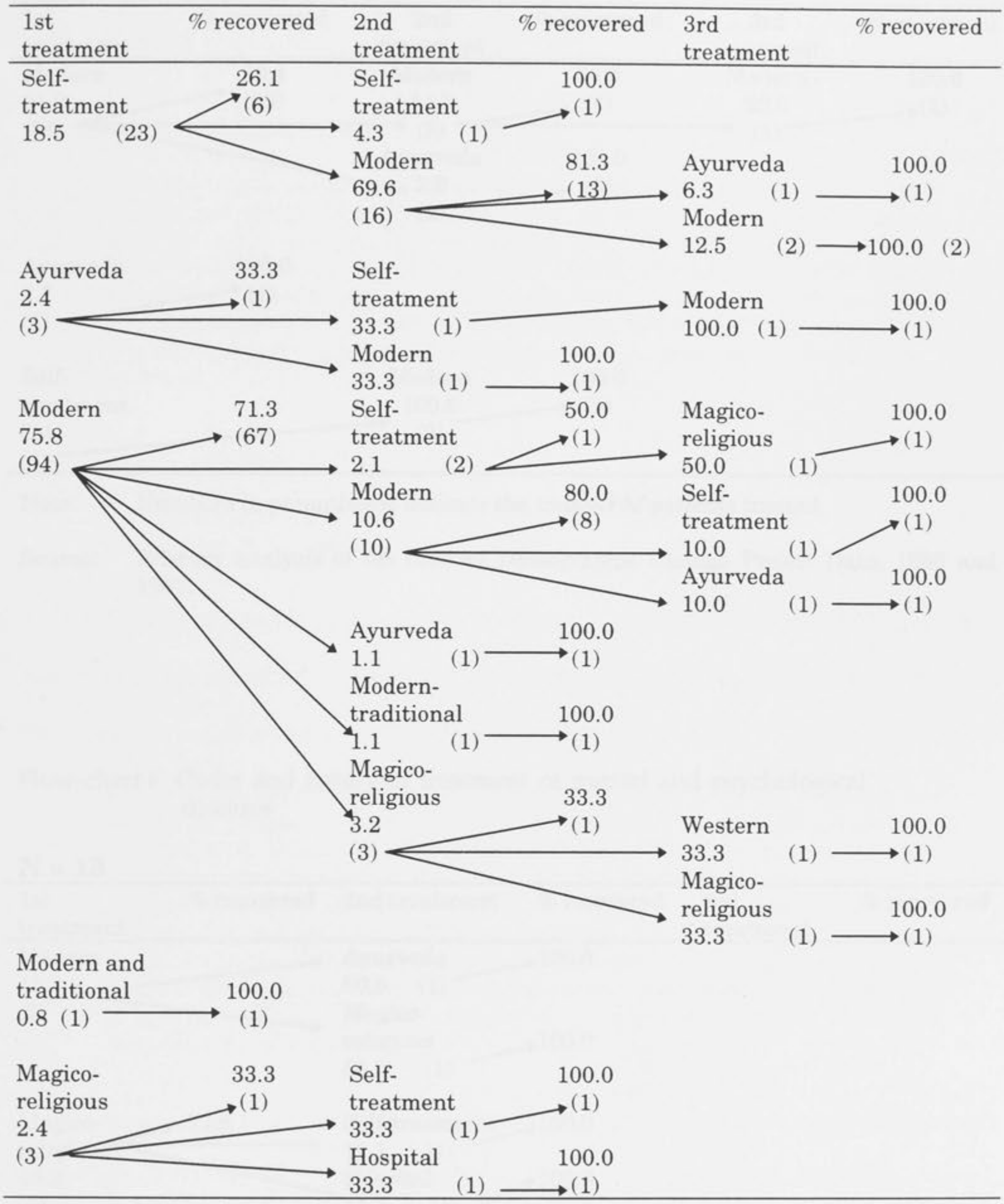
> Usually we go to the hospital to take treatment. Before going to the hospital I make some medicine at home for some illnesses. When we have slight fever, cold, cough or headache we use Panadol or Disprin or drink coriander water. But I am afraid to use home medicine for a long time for my husband and children because the children are very small and my husband is the only one who earns money for the family. So I try to get them to the hospital if they are not cured after using home medicine for 3 or 4 days. When we have serious illness we go to the private doctors ...Sometimes we go to the mosque when we are sick (not for specific illnesses) and our religious leader charms some water and puts it on the patient's face.

Serious diseases, such as the major respiratory diseases and diseases of the circulatory system, are normally treated by modern health care (see Flow-charts 4 and 5). As discussed in Chapter 2, major respiratory diseases are believed to be the result of humoral imbalances, while diseases of the circulatory system and cancers are believed to be due to one's *Karma* (punishment for deeds performed in previous lives). Nevertheless, these diseases are treated by modern medicine, because people understand that immediate medical attention may bring relief and even cure. Diseases regarded as serious or life-threatening are usually treated by modern medicine because of its efficacy and because the importance of quick treatment is understood. With traditional treatments there is a risk that the patients may die before the treatment has had its effect. Traditional treatments, however, are preferred for less serious illnesses.

Diseases said to be caused by supernatural powers are also treated first with modern medicine: magico-religious cures are usually only sought as a last resort after other available forms of treatments have failed. Flow chart 6 on the treatment of mental and psychological diseases shows how such illnesses are initially treated and how some people subsequently changed to magico-religious treatments. Because of the long-term nature of such illnesses and the analysis being restricted to those who have recovered, the numbers are, however, very small.

Flow-chart 4 Order and nature of treatment for other respiratory illnesses.

N=124

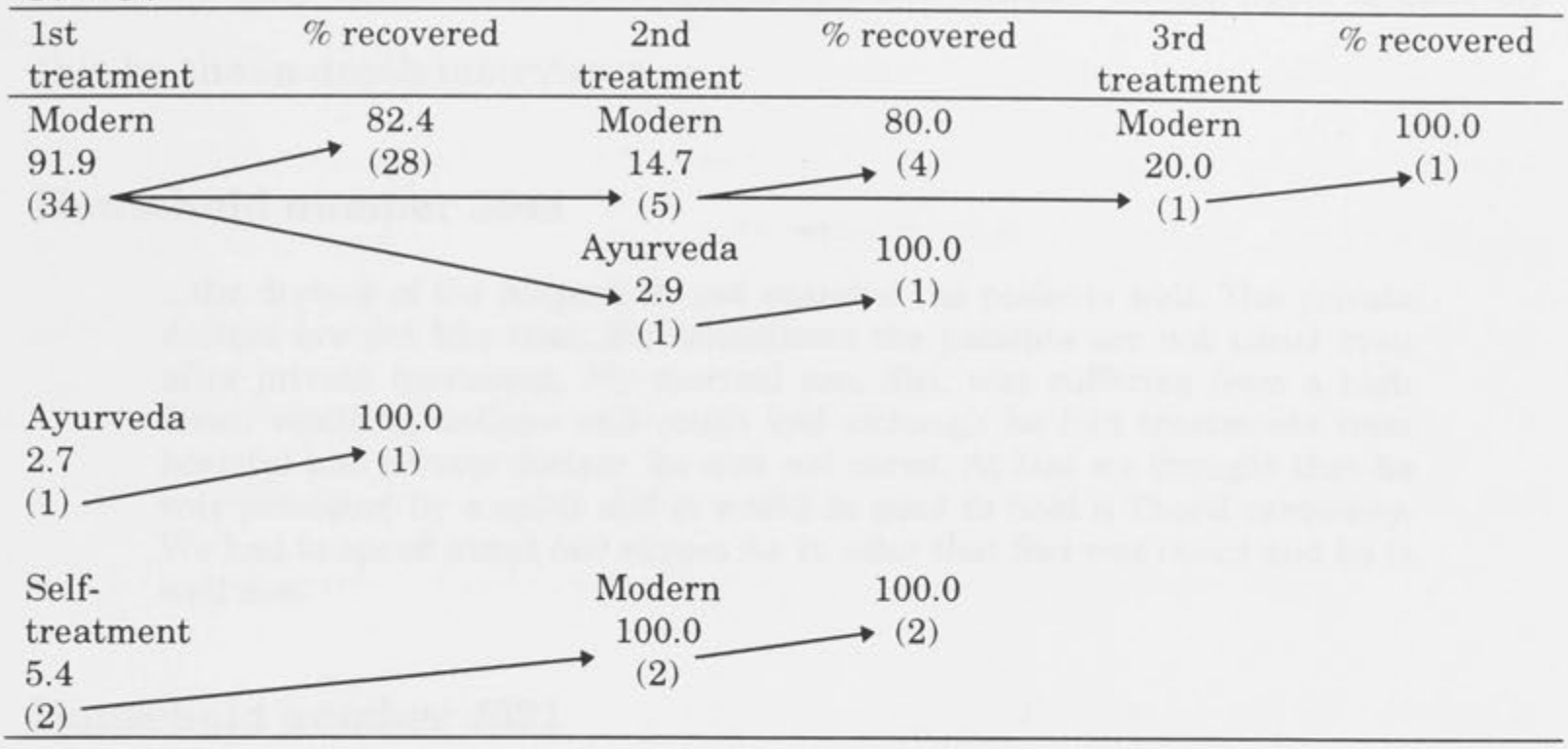


Note: Numbers in parentheses indicate the number of patients treated.

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

Flow-chart 5 Order and nature of treatment of disease of circulatory system

N = 37

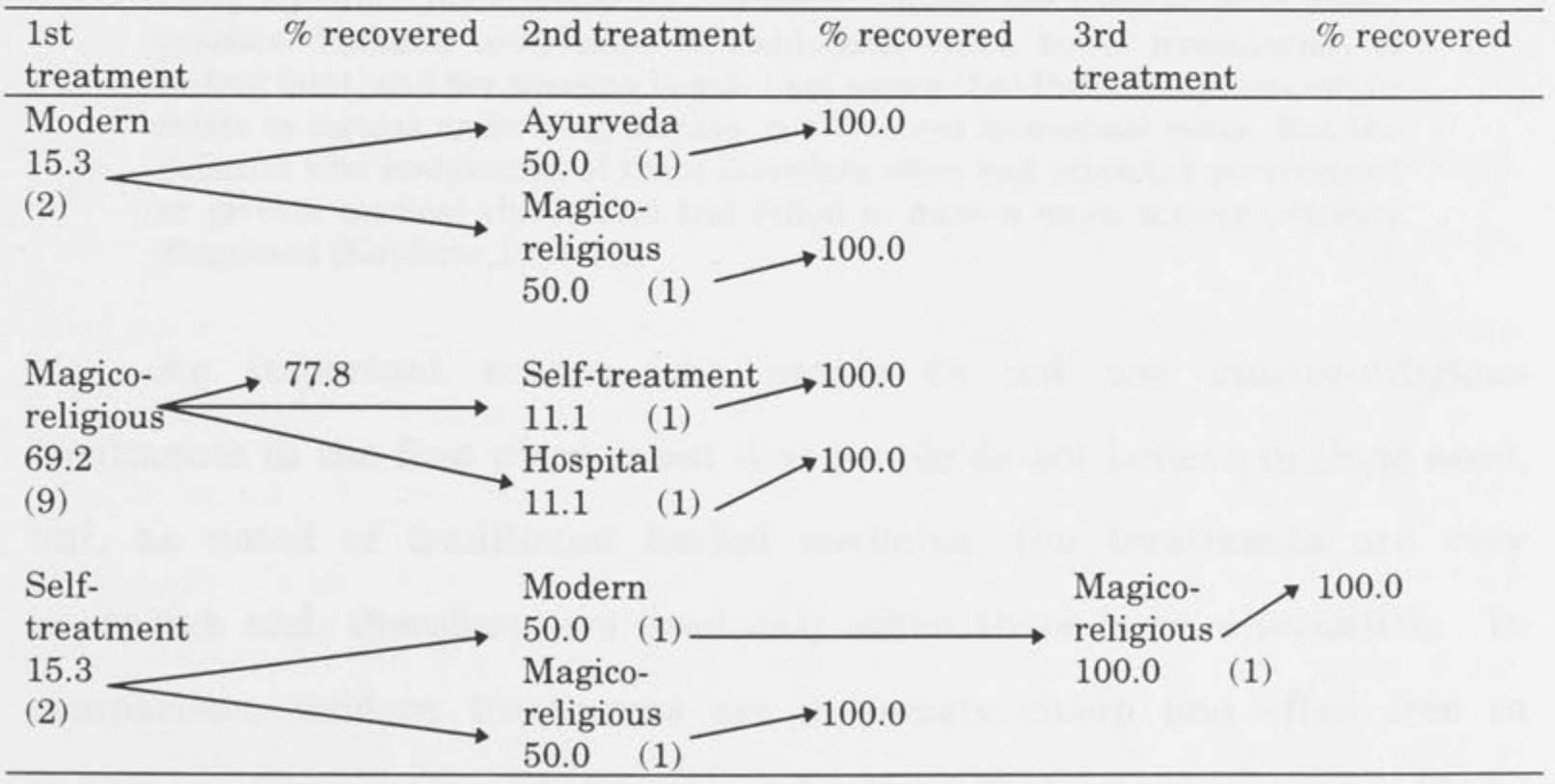


Note: Numbers in parentheses indicate the number of patients treated.

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

Flow-chart 6 Order and nature of treatment of mental and psychological diseases

N = 13



Note: Numbers in parentheses indicate the number of patients treated.

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

People appear to decide that certain ailments are due to supernatural influence only after modern treatments have failed. Some light is cast on this by the in-depth interviews.

Household number 3044

> ...the doctors of the hospital do not examine the patients well. The private doctors are not like that...But sometimes the patients are not cured even after private treatment...My married son, Siri, was suffering from a high fever, vomiting, asthma and cough and although he had treatments from hospital and private doctors, he was not cured. At last we thought that he was possessed by a spirit and it would be good to hold a *Thovil* ceremony. We had to spend about 500 rupees for it; after that Siri was cured and he is well now.

Household number 4031

> I had a fever and spent about 500 rupees for Western-type medicine but I couldn't get well; I got well from a *Thovil*.

Kapferer, who studied Sri Lankan healing traditions, noted that people generally used modern health services before seeking a cure from an exorcist. From the cases he observed during his field work, he stated:

> I have witnessed the performance of major exorcisms after the patient has outwardly, at least, appeared to have recovered from a bout of illness. Some patients only exhibited mild symptoms. These were frequently of an everyday order manageable by Sinhalese outside the context of exorcism practice. Patients complained of headaches, colds, bowel irregularity, of feeling faint, and not wanting to eat. I am aware that these symptoms might relate to serious underlying disease in a Western biomedical sense. But the patients who complained of these disorders often had attended government or private medical clinics and had failed to have a more serious problem diagnosed (Kapferer,1983:61).

An important reason why people do not use magico-religious treatments in the first place is not that people do not believe in their need, but, as noted of traditional herbal medicine, the treatments are very expensive and, therefore, are used only when there is no alternative. In comparison, modern treatments are extremely cheap and often free in government hospitals and dispensaries. Nevertheless, when supernatural causes are judged to be clearly the cause of the illness, then the victim may proceed directly to magico-religious treatment.

4.8 Reasons for changing treatment

The survey confirms that Sri Lankans put great emphasis on curing illnesses. This is important because preventive services have not eradicated all diseases, and infectious and parasitic diseases are still the major killers of young children in Sri Lanka (Ministry of Health, 1986). The diseases people reported themselves as suffering from during the survey were mainly minor ailments. Minor ailments, which are not dangerous to life, are treated initially mostly by home remedies. However, when these do not work, patients are usually quickly provided with professional care.

This emphasis on curing illness leads Sri Lankans to use all available health facilities. This is in marked contrast to Caldwell, Reddy and Caldwell's (1983: 203) findings in rural south India where people did not always continue treatment until the patient had recovered. Families commonly decided that the patient was going to die anyway and stopped treatment.

An important difference between Sri Lankan and Indian society is in decision-making within the family. A greater degree of female autonomy in Sri Lanka enables women to play a constructive role in health care. If a child is sick the mother can decide on her own initiative to seek treatment. This is often not true elsewhere in South Asia. Caldwell et al. (1983: 200-201) noted that in India young mothers normally have little responsibility for a sick child's treatment, the decision to use a modern or traditional healer being one for the husband or in-laws. Even if she could take responsibility it might be thought improper for her to go to a health clinic which might be far from her home. While the mother can give some home remedies the child may not be taken to a health clinic or a hospital until it is too late. Sri Lanka's high education levels mean that the mothers are able to respond appropriately. Diseases are more likely to be misclassified

by uneducated mothers and therefore treated by the wrong medicine. This is a particular danger if a professional doctor is not consulted.

The ability of Sri Lankans to seek treatment has been made very much easier by Sri Lanka's developed transport system which means that it is comparatively easy to visit a good doctor or health facility in another area. Many people, particularly in the Western Province where the field sites of the SLDCP were mostly located, live in rural areas but commute daily to Colombo or other towns for jobs and education. This means they have easy access to health services. This non-agricultural occupational structure has also influenced their attitudes and made them open to new ideas.

4.9 Family structure and decision making

As noted in Section 4.8 above, an important factor in the ability of Sri Lankans to respond to illness has been the influential position of women with regard to family decisions, and there is also the generally open nature of decision making within the family. This section examines this issue in more detail and looks at the underlying factors by reference to a provocative article by Dyson and Moore (1983) on the existence of two distinct demographic regimes in North and South India. They are referring to India, but their regimes may be extended by analogy to all of South Asia, and indeed their Southern model draws very heavily for its ethnographic description on Yalman's (1971) study of Sinhalese Kandyan society in Sri Lanka. Dyson and Moore (1983: 42-47) distinguish between a northern model with high mortality and fertility, and a high sex ratio, and a southern one which is much lower in all respects. They explain the two demographic regimes in terms of the family system and its effect on female autonomy.

The northern family is based on the male line. Women are peripheral. They are cut off from their families by a prohibition on the

marriage of relatives, and a strong preference for village exogamy where brides have to marry away from their families. In line with the emphasis on the male line women do not inherit property.

The consequence of this strong emphasis on patriarchy and the patriarchal family is that the family guards against couples becoming too emotionally attached as this could threaten the unity of the family. Families tend to be large consisting of a joint family of all the men's agnates, that is relatives through the male line.

In contrast the southern family system depends on the links created by marriage. It allows and even encourages marriages between relatives, the favoured marriage involving cross-cousins, that is a man marrying his father's sister's daughter or more usually his mother's brother's daughter. Women may inherit, and family sizes tend to be smaller, being based on the affinal link between husband and wife (Yalman, 1971).

The two different family systems have very different implications for the position of women. In the northern family a woman, especially a daughter-in-law, is marginal to her new family and hence the decision making process of the family even in regard to her own children, who are regarded as belonging to the male line. In contrast in the southern system a young wife is much more central to the family and in its decision making process. The central unit in the Sinhalese family is the conjugal relationship of husband and wife. The wife has a recognized role in decision making, though it may be subordinate to that of her husband. Her position is enhanced by the fact that she may be related to her husband's family and in any case her family is usually close at hand. It is significant that she may bring property into the new household, not only as dowry as in the northern family where it is generally taken as the husband's right, but as her own inheritance.

The implication of this difference in family systems for health behaviour is very considerable. A Sri Lankan woman is more able to use her own initiative in seeking treatment than is her equivalent further north in South Asia. This can be important when no one else is present in the household and when treatment is urgent. It is also important since the mother is usually more aware of her family's health than others. It is also a matter of priorities. A mother is much more likely to regard treatment of her children as an urgent requirement than is even the children's father or more especially his family. In the joint households of India, there may be a feeling that a little illness is not a concern and indeed may be good for the child; besides, too much attention to children may be regarded as indulgence which conflicts with the respect for the aged that is central to such families. These attitudes are especially the case with regard to girl-children, and even adult women, who are expected to be subordinate, and whose health is regarded as less important than that of the men who are the breadwinners and the boy-children who will carry on the family line. Furthermore in a traditionally patriarchal society what little influence a woman has may depend on her showing that she is particularly respectful of traditional authority. This itself would discourage the innovative attitude required, for example, in adapting new health treatments.

In the SLDCP women were asked in Welisara and the estate who decides when a mother takes a child to hospital. Almost half in Welisara said the mother alone (48 per cent). Most of the remainder replied the mother with her husband's agreement (45 per cent). A mere 7 per cent said it was the husband's decision alone. In the estate only 9 per cent said that the mother made the decision alone; the majority response was that the decision was made with the husband's agreement. A sizable minority (19 per cent) of respondents said that it was principally a decision of the husband.

Both these communities, that is the predominantly Sinhalese Welisara, and the majority Indian Tamil Estate, belong to the Southern family system referred to above. Nevertheless, it is clear that there is a substantial difference between the behaviour of Welisara families and estate families. I believe that the Indian Tamil family system may have been influenced by the North Indian family system — the joint family being regarded as the ideal Hindu family — and that this may have reduced the autonomy of action permitted to women. However, this acceptance of the North Indian model is not universal in South India; it is not true of the state of Kerala, which not coincidentally has many of the demographic characteristics of Sri Lanka, and similar health behaviour.

By and large, Welisara women and other low-country women have considerable autonomy in making decisions to take children to hospital, though close to half would prefer the agreement of their husbands. In the estate, the men retain a much greater authority. Very similar results were found when we asked women about non-health decision making, in household expenditure and family planning. In Welisara it was primarily the wife who decided; in the estate, the husband.

I examined the figures by reference to religion and education. Unfortunately the figures are small and Welisara is ethnically fairly homogeneous. Although religiously it is divided between Buddhists and Christians, most of these are Sinhalese and the two religious groups demonstrate similar characteristics. In terms of education there is surprisingly little difference. So education may not be the primary factor behind the high degree of autonomy of Sri Lankan women, and more ancient cultural factors such as the family system, referred to above, may be more important. Also, where education levels are already very high the whole society may be linked with the new values accompanying education.

4.10 Summary and conclusion

This chapter has briefly examined the prevalent diseases and the types of health facilities employed in the study areas. It has focused on how people classified illnesses and how they treated them. While people extensively use the widely available modern medicine, traditional forms of treatment are used for some illnesses for which people believe them to be particularly appropriate, and to restore the balance of humours after taking modern medication. This is particularly true for illnesses for which no permanent modern cure is available; for example, chronic rheumatism, and culturally defined mental illnesses such as demonic possession. Ayurvedic herbal medicines are often self-administered used as a preliminary treatment before professional advice is sought.

Since humoral concepts and particularly supernatural concepts differ greatly from modern Western medical concepts, it might seem logical that traditional health concepts and treatments would have hindered Sri Lanka's mortality transition. The survey findings indicate that people have a clear understanding of what is the appropriate treatment for a particular circumstance. Significantly, acute life-threatening conditions almost invariably are treated with fast-acting medicine, that is, modern medicine. Ayurvedic treatment is used for chronic diseases, and self-treatment for minor ailments which are not life-threatening, as well as to complement modern medicine as for example through appropriate diet. Magico-religious cures are used mainly for comparatively rare psychological conditions, which though serious are not in general life-threatening. The level of Ayurvedic and magico-religious treatment has probably been under-reported in the latter part of this chapter since the analysis referred primarily to first treatment or to illnesses which were now cured, and also because the Ayurvedic system relates not just to individual treatments but to a total concept of care, including diet.

Nevertheless, the analysis indicates that the primary form of treatment is modern, either free hospital treatment or private fee-paid medicine. This is true irrespective of the respondents' demographic and socio-cultural characteristics though this does have some effect on the type of health services used. Ayurvedic medicine was preferred by older people, and especially the Sinhalese. Young Muslim and Tamil children were most likely to have received magico-religious cures, though the very expensive exorcism ceremonies are mainly practised by Sinhalese. The Moors' neglect of their children's minor respiratory illnesses may be a revealing example of how the lack of humoral concepts of illness causation has reduced sensitivity to illness and thus delayed treatment.

There was little difference in the treatment of males and females in the survey areas, although males were marginally more likely to use self and magico-religious care. There was comparatively little difference in treatment by education. Two points might be noted in this regard. First, education is widespread and even the less educated are influenced by the ideas of the educated. Secondly, most of the educated in the survey were Sinhalese Buddhists, among whom belief in Ayurvedic humoral concepts was particularly strong. All classes believe that illnesses are due to humoral imbalance, yet most turn to modern medicine for treatment. People generally use modern treatments first even though they believe they cause side-effects, particularly through heating of the body. Therefore, while taking modern drugs, they often use `cooling' foods such as coconut water, or sago, and take showers to counterbalance the alleged heating effects.

Attitudes and the sensitivity of people toward the need to cure the sick have been encouraged by various social changes which have taken place in Sri Lanka since the beginning of this century. The most important of these changes is the increased education, particularly of women, which has

encouraged female autonomy in family decision-making. Decision-making regarding the treatment of different illnesses at various stages, and the willingness to experiment with new forms of treatment are described in Section 4.5.

Once someone has been identified as ill, minor illnesses are treated by simple herbal preparations and modern analgesics. When these appear not to be working, more sophisticated treatments are adopted, usually within three days. Medicine without professional advice was, on average, used for not more than three days. Folk-religious cures are sought as a last resort. Despite holding traditional concepts of disease causation, Sri Lankans use modern medicine as they believe it is needed.

Indeed, many Sri Lankans regard modern and traditional medicine as complementary. They regard modern medicine as quick and necessary where a fast cure is needed and where traditional medicine would be either dangerously or inconveniently slow, as with acute diseases. However, where a long-term cure is needed, as with a chronic disease, or where the aim is to remove the underlying cause of a disease after modern medicine has dealt with the symptoms, traditional medicine is sought.

Ayurvedic theory, the basis of Sri Lankans' traditional concepts of medicine, has facilitated the Sri Lankans' acceptance of modern medicine because it holds that diseases have physical causes, and can therefore be cured, often by some form of material treatment. Consequently, Sri Lankans are willing to accept new types of treatment.

Finally I examined decision making within the family and noted that Sri Lankan family structure allowed a greater role for women in decision making in regard to health and encouraged innovation in health behaviour. The next chapter examines the innovativeness of the Sri Lankans in accepting the modern preventive health services.

Chapter 5

Preventive health care practices affecting women and children

5.1 Introduction

More than half a million women in the world die each year of pregnancy and childbirth related causes, and most of these deaths occur to women in developing countries (Belsey and Royston, 1987: 7; WHO, 1991): about one in 50 women in developing countries die from causes related to pregnancy and childbirth compared with one in 2,700 in developed countries (World Bank, 1993: 113). Over half the maternal deaths in the world occur to women in Asia, and three-quarters of these deaths take place in South Asia: in India, Bangladesh and Pakistan (Belsey and Royston, 1987: 7). Although maternal deaths could have causes other than reproduction-related morbidity, at the childbearing years between a quarter and a third of the deaths of women are related to pregnancy and childbirth (Royston and Armstrong, 1989: 36-37). The risk of dying in pregnancy and childbirth for a woman in a developing country is 50 to 100 times higher than in developed countries (Starrs, 1987: 6). Between 88 and 98 per cent of the deaths related to pregnancy and childbirth are preventable with a modest level of health care (WHO, 1991) and improved nutritional status, but such changes depend upon wider societal factors such as women's intrinsic status and socio-economic status Uyanga (1990: 655-658).

Traditional societies have accepted the risks of childbirth as unavoidable, as pregnancy and childbirth are seen as essentially natural events (Royston and Armstrong, 1989: 9). In some developing societies women are reluctant to visit health centres with problems related to reproduction because of the `culture of silence' which sees such problems as the natural consequence of pregnancy and childbirth (Zurayk et al., 1991:

232). In some instances women may not want to be seen by male doctors, which is likely if they attend a free health clinic. Those who can afford it go to private clinics where they can choose a doctor, in this case a female doctor.

In recent times the suffering related to maternity, and the very important fact that the suffering is preventable, have been widely recognized. The preventive measures that have been suggested include provision of health care, particularly community-based care, during pregnancy and childbirth, and in the postnatal period, family life education including general family health and better nutrition. Strong emphasis is also placed on the provision of family planning services and information (Starrs, 1987; Royston and Armstrong, 1989). Providing a safe health environment for women is important not only for their own well-being but for that of their offspring too, therefore equal attention should be given to both maternal and child health.

Infant and child mortality, that is deaths to children under one and five years of age respectively, are of major concern in many developing countries. Every year 13-15 million children die before their fifth birthday and 98 per cent of these deaths are of children in developing countries (Mosley and Cowley, 1991). One third of deaths to children under age five in developing countries are caused by diseases that could be prevented either by changes in behaviour or by immunization: neonatal tetanus, pertussis (whooping cough), measles. In 1991, in developing countries, there were still 1.7 million child deaths due to measles, pertussis and neonatal tetanus (UNICEF, 1992: 12). In Matlab Thana, Bangladesh, 35 per cent of the child deaths were caused by preventable diseases and in a Javanese village in Indonesia, tetanus, pertussis and measles caused 35 per cent of deaths to children under the age of two (Foster, 1984: 119). Neonatal tetanus can be prevented by training traditional birth attendants

in hygienic delivery techniques, educating women on the importance of hygiene during pregnancy and birth, and immunizing the pregnant women (WHO, 1986: 14). Children receive protection against tetanus for the first few months of life if the mother is immunized against tetanus during pregnancy. Early breastfeeding with colostrum is also a good source of immunity against many childhood infections (WHO, 1986: 15). Childhood diseases such as pertussis and measles can be prevented by immunization. Although Acute Lower Respiratory Tract Infection (ALRTI) cannot be prevented it can be successfully treated, but in many developing countries such services are not easily available (Foster, 1984: 126-136).

Diarrhoeal diseases cause over two million deaths annually to children in developing countries (UNICEF, 1992: 17). The incidence of diarrhoea in young children is influenced by socio-economic differentials in child care practices such as preparation of weaning food, boiling of drinking water, and personal hygiene. Preventing food contamination by using pure water, hygienic utensils and hygienic food handling is an important way of reducing the incidence of diarrhoea (Black, 1984: 156-57).

Infant, child and maternal mortality levels in Sri Lanka are very low compared to those in many developing countries in Asia, Africa and Latin America (see Table 1.1 in Chapter 1). Mortality rates, however, are not uniform throughout the country, presumably because of differences in health behaviour among population subgroups in different regions as well as in the degree of accessibility and availability of health services. Behavioural variations arising from socio-cultural differences among different subgroups lead to differences in maternal, infant and child health. While many of these differences relate to behaviour in seeking health treatment, preventive behaviour is also important.

The purpose of this chapter is to look at both modern and traditional preventive practices in Sri Lanka as they affect the health status of both mothers and children. The mother's own health status as well as her care of her offspring affects their survival chances. Antenatal care, maternal food supplements, place of delivery, assistance during delivery, breastfeeding and breastmilk supplements, and hygiene affect the health of the mother and the newborn baby. A mother's preventive health behaviour is also affected by her education and socio-economic status. The sections below discuss various preventive practices and differences according to the characteristics of the mother such as place of residence, education and socio-economic status. Although in many studies family planning has been included as one of the preventive measures, I have not included a family planning variable in the present analysis as it is too large a topic to incorporate into this chapter.

Since the Sri Lankan Demographic Change Project (SLDCP), the major source of data for this study, did not cover the total population of the country, where possible Sri Lanka Demographic and Health Survey (SLDHS) results are included for comparison. In-depth interviews with the respondents from the SLDCP are used to supplement findings from the quantitative data. All the respondents have been given pseudonyms to ensure confidentiality.

5.2 Can infant and child deaths be prevented in Sri Lanka?

The analysis of the causes of infant and child deaths as reported by SLDCP respondents is shown in Tables 5.1a and 5.1b. The main causes of infant deaths among the urban poor were said to be skin disorders (possibly a result of malnutrition), nutritional deficiencies and infectious diseases. Child deaths in the urban poor areas were caused mainly by gastro-intestinal diseases and infectious and parasitic diseases. In urban middle-

class areas infant deaths were mainly attributed to prematurity and convulsions, while child deaths were mainly attributed to convulsions, infectious and parasitic diseases and `prematurity'. Infectious and parasitic diseases, prematurity, convulsions and skin disorders were reported as the four major causes of infant deaths and the first three as the main causes of child deaths in rural areas. In the estate, convulsions, prematurity and infectious and parasitic diseases were reported as the prime causes of deaths of both infants and children.

Although care is needed in interpreting the tables, because of the comparatively high proportion of deaths where the cause is not known, it is clear that most infant and child deaths in the study areas were caused by preventable diseases as is true of Sri Lanka as a whole. Perinatal disorders, respiratory diseases, infectious diseases, nutritional deficiencies and skin diseases are the major causes of infant deaths in Sri Lanka. The main causes of child mortality are infectious diseases including diarrhoeal diseases, respiratory diseases and nutritional deficiencies (Ministry of Health, 1983: Table 4.3; Gunatilleke, 1987: 13-18).

Since much of the mortality of infancy and childhood was from preventable causes, I have investigated the practices of the survey population that affect the health of women in the childbearing ages, infants, and young children. The practices that affect maternal health include care taken during pregnancy, childbirth and postnatal periods and they include both medical and personal care received at those critical times. Maternal behaviour during pregnancy, in particular, and in the process of childbirth also influences the outcome of pregnancy.

Table 5.1a Causes of mortality for children aged under one year by place of residence, SLDCP 1985 and 1987 (per cent).

	Urban middle-class	Urban poor	Rural	Estates
Gastro-intestinal diseases	0.0	4.1	0.0	1.1
Infectious and parasitic	7.0	11.0	11.7	10.0
Prematurity	14.5	7.9	15.0	20.0
Birth-related	5.2	2.8	1.7	1.1
Respiratory	8.7	4.8	3.3	0.0
Nutritional deficiency	6.1	10.3	5.0	2.2
Skin disorders	3.5	15.5	10.0	4.4
Accidents	0.0	2.4	1.7	1.1
Fever	2.6	7.6	0.0	2.2
Cardiovascular disease	4.3		1.7	1.1
Convulsions	13.0	9.0	10.0	18.9
Other	2.0	2.6	1.6	3.4
Unspecified causes	12.2	7.2	3.3	25.6
Don't know	20.9	14.8	35.0	8.9
Total	100.0	100.0	100.0	100.0
N	115	290	60	90

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

Table 5.1b Causes of mortality for children aged 1-4 years by place of residence, SLDCP 1985 and 1987

	Urban middle-class		Urban poor		Rural		Estate	
	N	%	N	%	N	%	N	%
Gastrointestinal diseases	14	8.6	105	27.0	6	7.9	9	7.6
Infectious and parasitic	21	13.0	58	14.9	13	17.1	11	9.2
Prematurity	16	9.9	24	6.2	9	11.8	20	16.8
Birth-related	6	3.7	4	1.0	1	1.3	0	0.0
Respiratory	9	5.6	28	7.2	2	2.6	7	5.9
Nutritional deficiency	3	1.9	8	2.1	1	1.3	1	0.8
Skin disorders	2	1.2	5	1.3	3	4.0	2	1.7
Accidents	1	0.6	14	3.6	4	5.3	2	1.7
Fever	6	3.7	30	7.7	0	0.0	3	2.5
Cardiovascular disease	7	4.3	4	1.0	2	2.6	3	2.5
Convulsions	26	16.1	28	7.2	8	10.5	21	17.7
Other	10	6.2	12	3.1	3	4.0	6	5.0
Unspecified causes	17	10.5	25	6.4	2	2.6	26	21.9
Don't know	24	14.8	44	11.3	22	29.0	8	6.7
Total	162	100.0	389	100.0	76	100.0	119	100.0

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

5.3 Care of the mother in the prenatal period

Adequate prenatal care during pregnancy is an important factor for both mothers' and infants' well-being. If a pregnant woman goes to a clinic for prenatal care she and her unborn child can be closely monitored; this also allows for a follow-up of mothers at risk. The number of antenatal visits as well as the quality of antenatal care received are the important elements of prenatal care. Ideally, it is best if monthly prenatal visits are made during pregnancy or at least five visits with three in the third trimester (Ebrahim, 1979: 19).

An important function of prenatal care is that it allows for early detection, prevention and treatment of anaemia which is an important cause of maternal morbidity and mortality. Other functions of prenatal care include detection and management of pregnancy-induced hypertension by measuring blood pressure and noting such symptoms as sudden increases in weight, swelling of legs, and severe headaches; prompt referral to hospitals of women who have vaginal bleeding which could be the result of partial detachment of the placenta; and examination of the foetus to determine its position so that in case of breech or transverse presentation the women can be advised to seek professional attendance during delivery (Royston and Armstrong, 1989: 161-162).

Another important benefit women can gain from prenatal care is injection with tetanus toxoid which gives protection for both the mother and the newborn. Passive tetanus immunization of the infant via the mother gives the infant protection from neonatal tetanus for the first few months of life (WHO, 1986: 14-15).

Many of the infant deaths and disabilities occur in the peri-natal period (between the 28th week of gestation and first week of life) and are primarily determined by the condition of the pregnant woman and the

circumstances of the birth. Low birthweight is one of the main contributory factors to neonatal mortality (in the first four weeks of life) and low birthweight babies are at a high risk of dying from infections such as diarrhoea, measles and respiratory infections, at later ages (WHO, 1986:8). The two major causes of low birthweight among newborns are prematurity[1], and maternal malnutrition leading to foetal starvation.

Both perinatal and neonatal mortality are directly related to the mother's health and to events during or immediately after birth. Therefore, in this period of the child's life, the mother's care is the most important and effective way of preventing death (WHO, 1986: 8-12).

Perinatal deaths as well as neonatal deaths are mainly caused by decreased oxygen supply to the foetus during labour and delivery (intrauterine and birth asphyxia), low birthweight due to prematurity or mother's malnutrition, birth trauma, and intrauterine or neonatal infections. Unhygienic delivery practices can introduce infections and cause pneumonia and general sepsis in the infant.

Neonatal tetanus is perhaps the most important cause of infant deaths in many countries: it has been estimated that 900,000 infant deaths in the world each year are due to neonatal tetanus. This is directly related to traditional practices such as treating the cord with cowdung, ash or clay to stop bleeding, and cutting the cord with unclean instruments (WHO, 1986: 10-13; MacCormack, 1982a: 22).

The point explored in this section is the antenatal behaviour of mothers who had children aged five years or below at the time of the survey. Antenatal behaviour includes the use of a service from medical or paramedical personnel and dietary behaviour during pregnancy.

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1 Often a result of the mother's continuing to engage in heavy work.

5.3.1 Antenatal care of pregnant women in Sri Lanka

A longitudinal survey of pregnant women in three districts, Kurunegala, Puttalam and Anuradhapura, of the dry zone of Sri Lanka showed that 86 per cent of such women had been to a clinic or to a doctor to receive antenatal care in the early stage of pregnancy and 82 per cent of women had at least one dose of tetanus toxoid; however, 15 per cent of those who had visited a clinic or a doctor had not had the tetanus toxoid injection. The lower use of tetanus toxoid is partly a result of including all women, some of whom have had tetanus toxoid for their previous pregnancies that occurred within the last three years—tetanus toxoid gives immunity for three years. Still, of the women with first pregnancies only 88 per cent had tetanus toxoid. Fifty per cent of the pregnant women had been visited by the family health midwife who plays a major role in the delivery of health care at the periphery, yet this visit had apparently had no effect on whether mothers received tetanus toxoid, there being no difference between those who had been visited by the midwife and those who had not. In the case of the first pregnancy, clinic attendance by pregnant women was higher, 91 per cent, yet 12 per cent of them had not received tetanus toxoid (Meegama and Gaminiratne, 1986: 17-20; Meegama, Gaminiratne and Perera, 1988: 15-17).

The SLDHS conducted in 1987 showed that out of 226 women pregnant at the time of the survey 37 per cent had not yet been seen by health personnel for a general check-up. Of the same group of women 64 per cent reported that they had not yet had a tetanus toxoid injection for their current pregnancy. It is possible that some of these women may have had tetanus toxoid during their previous pregnancies. Of the women with children aged less than five years, 82 per cent had received a tetanus injection during their pregnancies, but only 66 per cent completed the two

doses required. The rest of the women received only one dose of the toxoid. Department of Census and Statistics (1988: 103) reported:

> ... it is likely that at least some of them were protected by two doses during an earlier pregnancy and the one injection for the most recent pregnancy represents a booster shot.

In SLDCP questions were asked on whether the mother received any antenatal treatment and who provided it during each of her pregnancies but questions were not asked about the number of the mother's antenatal visits during pregnancy and whether she had received tetanus immunization. The area midwives interviewed in the SLDCP claimed that they visited all pregnant women in the survey areas and kept records of the visits. The midwives paid monthly visits to households in addition to getting mothers to visit the clinic each month.

Table 5.2 compares the information from SLDCP and SLDHS on the person women visited for antenatal care; mothers with children under age five are included in the analysis. The SLDCP results show that slightly over half the rural and estate women with children under five had received professional antenatal care while nearly three-quarters of the urban women had received professional care. However, 46 per cent of estate women had received no care compared to 14 and 23 per cent in urban and rural areas respectively. The SLDHS results show a very high level, 95 to 97 per cent, of antenatal care in all areas. In my research nearly half the women in the estates did not receive any antenatal care during pregnancy while in SLDHS the proportion of the women who did not receive antenatal care is very small. Part of the explanation for the large discrepancy between the two surveys may be the use by the SLDHS of prompt sheets for these questions. Some of the women in the SLDCP may have misunderstood the question and only recorded their visits to doctors, and not visits to MCH midwives. This cannot, however, be the major explanation in the estate

where many women were reluctant to go to the clinic as it would mean forgoing earnings from their wage labour. In the SLDCP the survey formed only part of an intensive investigation of the family, and it is possible that SLDHS either received exaggerated reports of professional care or used a very generous definition.

Table 5.2 Percentage distribution of mothers with children under five years of age by type of antenatal care received, and residence in SLDCP and SLDHS.

	Urban		Rural		Estate	
Type of care	SLDCP	SLDHS	SLDCP	SLDHS	SLDCP	SLDHS
No care	14.2	2.6	22.7	3.4	46.3	5.0
Professional	73.3	97.4	58.5	96.6	52.5	95.0
Vitamins[a]	12.5	--	18.8	--	1.3	--
Total %	100.0	100.0	100.0	100.0	100.0	100.0
N	176	547	176	3157	160	277

Notes: a Vitamins may be regarded as self-care as they are often taken without a prescription. This was not asked in SLDHS.

Sources: 1 Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.
2 Primary analysis of Sri Lanka Demographic and Health Survey data, 1987.

Many of the low-country women, especially rural women, who had not visited a doctor, nurse or a midwife for antenatal care, had used some vitamins which are thought to give nourishment and strength. Usually pregnant women in Sri Lanka prefer to avoid medication but the multi-vitamins are thought to be beneficial for them especially when they cannot afford to buy nourishing foods such as meat and eggs.

The number of women from whom information on antenatal care was collected is too small to analyse by their level of education. However, it appeared from the data that the proportion of women who did not use any antenatal care in all survey areas decreased with the increase of educational achievement. Nevertheless, a statistically significant difference between the use of antenatal care and education was shown only in the urban

middle-class area. One striking finding in the urban middle-class area was that educated women, while much more likely to use some form of antenatal care, tended to use vitamins more than less educated women.

5.3.2 Diet during pregnancy

In pregnancy, women are expected to increase the quantity and quality of food they take. On average a woman should consume 500 to 600 extra calories per day to guarantee her health and that of her baby. However, in many poor areas such as South Asia many women do not get adequate food during pregnancy (Chen, Huq and D'Souza, 1981), or at any other time. Women's nutritional status is worst in South Asia, where the prevalence of anaemia, protein-energy malnutrition and vitamin A deficiency is the highest in the world, and where girls and women suffer disproportionately as a result of widespread discrimination (World Bank, 1993: 76). The small stature of many South Asian women associated with poor lifetime nutrition increases the risks during pregnancy.

While poverty is often cited as the main cause of inadequate food intake during pregnancy, some researchers also argue that cultural food taboos and women's secondary status restrict the amount and quality of food they consume. In a number of Asian and African countries children and women, especially pregnant women, are discouraged from eating eggs and fruit (World Bank, 1993: 79). In many South Asian societies, generally men are served first and females afterward; when food availability is limited, women may get less food than they require. Often women in poor societies do not even change their food consumption patterns during pregnancy (Samarasinghe, Kiribamune and Jayatilake, 1990: 7).

Diet during pregnancy can be a very important form of antenatal care; but in some societies cultural taboos on food intake during pregnancy deprive women of nutrients needed by the mother and the growing foetus

(Bhatia, 1981: 73; Bhatia, Chakraborty and Faruque, 1979: 2). In Bangladesh foods considered to be harmful to the foetus and to cause deformities in the child or to cause miscarriages are tabooed in pregnant women's diet:

> the food intake and the kinds of food she eats are strictly controlled by her mother-in-law or by other elderly female relatives. The pregnant woman is advised to eat moderately so that the foetus does not grow too large and make the delivery difficult. She is often forbidden to eat certain kinds of fish, meat, vegetables and sweets. Such foods are tabooed because they may harm the foetus, produce certain deformities in the child; or because they might precipitate a miscarriage (Bhatia et al., 1979: 6).

Because fish, eggs, and meat are tabooed, and meat is not affordable to most families because of poverty, Bangladeshi women in pregnancy generally do not get enough protein in their diet. Cultural factors related to intrafamily food allocation, with females only eating what is left over after the men have been fed, accentuate the problem (Bhatia, 1981: 69-70). Pregnant women in North India are in theory subject to an elaborate set of rules which are supposed to protect their health and that of the unborn baby. They should supplement their diet with foods that are regarded as providing coolness and strength, but not eat too much food as it might fatten the baby making the delivery difficult; they should avoid heavy work but should not rest too much because it might weaken their bodies again making delivery difficult. The concern about having large babies is not unfounded, for many women are of small stature as a result of a lifetime malnutrition. In practice few North Indian women can afford to observe the food rules completely (Jeffery, Jeffery and Lyon, 1988: 77). Nichter and Nichter (1989: 32-38) similarly observed in the South Indian state of Karnataka that rural women had conflicting ideas about the food intake during pregnancy relating to the size of the baby and ease of delivery. However, Reddy (1990: 597-598) found that Karnataka women did not believe in consuming less food to ensure a small foetus and an easy delivery.

Nevertheless, the social and cultural barriers that restrict women's food consumption in many societies are compounded by many other social constraints. First of all the way that a society perceives a woman's well-being is important. When a woman is seen as a housewife who looks after the interests of the others, particularly of the husband as the chief breadwinner, she is expected to play an insignificant role in the family. Women may accept the gender discrimination because it is the social norm; the lower levels of women's participation in income-generating activities may make the woman a passive acceptor of the situation; and the illiteracy or the lower level of education may make them unquestionably accept the traditional value system in the society (Samarasinghe et al., 1990: 9).

Cultural food taboos and restrictions which cause undernourishment in pregnancy can lead to increased risk from pregnancy, and more infant deaths. Dietary restrictions during pregnancy may also adversely affect the quality and quantity of the mother's milk. The traditional notion in Sri Lanka is that pregnant women should eat for two (Gunatilleke, 1987).

In Sri Lanka traditionally pregnant women are expected to avoid `heating' foods such as pickles, pineapples, raw pawpaw, breadfruit and certain types of fish, as such foods may cause miscarriages: in fact, unripe pineapple and pawpaw are local abortifacients. `Cooling' foods are also omitted from pregnant women's diet as their bodies are `hot' and too much cooling may affect the foetus. Nevertheless, if a pregnant woman craves for something, whether it is dangerous or not, her craving should be satisfied. To deny a woman what she craves is a sin and may seriously damage one's chances of rebirth. A more immediate result of such a denial would be the `rotting' of the ears of foetus (Obeyesekere, 1963: 324). However, in Sri Lanka, in contrast to elsewhere in South Asia, the SLDCP's in-depth interviews show that while there were restrictions on a pregnant woman's diet, they were not likely to cause any nutritional deficiencies since the

restricted foods did not form a major part of their diet. The following case studies from the SLDCP illustrate respondents' ideas about dietary restrictions during pregnancy.

Sumi is a 41-year-old rural Sinhalese mother of four children who studied up to Advanced Level Certificate (12 years of schooling). She now works as a postmistress of the sub post-office. She said:

> If the mother wants to have a healthy baby she should take good meals. When I was pregnant I took meat, fish, eggs, fruits and vegetable leaves; specially I took fresh vegetable leaves and fruits. I got some advice from the clinic about that...When I was pregnant I did not take some kinds of foods, I believed I should not eat *gahala* (taro yam) and breadfruit [regarded by the Sinhalese as heating]... foods containing oil are not good for the mother. After the baby is born the mother's womb is in a new condition and because of this oily foods are not good for the mother.

Nona is now 68 years old, she married at the age of 17 and had six children; she is also a rural Sinhalese, with three years of education:

> When I was pregnant I did not eat manioc (cassava) and sweet potatoes; my belief is that through these foods the baby may catch a fit of convulsions.

Sundari is an estate Tamil woman, 28 years old, uneducated and a mother of five children:

> Pregnant women are allowed to eat all foods except pineapple which causes stomach pains. When a pregnant woman is sick she is given chicken soup, *rasam*[2] and mutton.

A 37-year-old Sinhalese woman with two children works as a tea plucker; she only had three years of schooling:

> Dried fish, tomato and green jackfruit (young fruit known as *polos*) are heating foods and they are not given to pregnant women or small children... [However,] ... anything that a pregnant woman wants to eat should be

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2 *Rasam* is a soup made with spices such as coriander, cumin, cinnamon, garlic and tamarind.

> supplied. If she is not given these things they believe that the placenta will not come away easily.

Another respondent from Bondupitiya, Kusuma, aged 38 with four years of schooling said:

> *kitul* flour and *madu pittu*[3] are not good for a pregnant woman to eat because they can harm the foetus. ... Earlier days, vitamins were not given by the hospital and I also do not approve of taking medicine during pregnancy because that can harm the foetus.

Whether the women are educated or not, they all have certain ideas regarding the suitability of different types of food during pregnancy. Most of the foods the respondents regarded as unsuitable are not eaten daily and therefore avoiding them should not affect the nutritional status of pregnant women.

The in-depth interviews with the respondents also indicated little discrimination in intrafamily food allocation at least in the low-country areas, in contrast to Bangladesh where this played a major part in undernourishment in females. Men in the family were generally served first, but equal portions were given to all. There seem to be no requirements that children should wait for the older males to eat first. In the tea estates, however, where often the husband ate alone or with the children, an insufficiency of food may have led to the woman getting less than her share.

5.4 The process of birth

The employment of traditional birth attendants (TBA) rather than trained medical staff, and births at home in developing countries can lead to complications and even death of women and infants. Institutionalized births ensure that both the mother and the infant receive professional care

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3 These two foods are regarded as very cooling and because a woman's body is hot during pregnancy such foods can by cooling the body cause miscarriages; yet these are very rarely eaten.

during and after delivery. Deliveries by non-professionals under unhygienic conditions can lead to high infant and maternal mortality due to neonatal tetanus infection of infants and sepsis infection of mothers (Meegama, 1980: 17).

5.4.1 Place of delivery

The place of delivery is one of the major factors determining the incidence of neonatal deaths (Foster, 1984: 121-122). Neonatal mortality is mainly due to birth injuries, the after-effects of obstructed or prolonged labour and infections during delivery, all of which are more likely in home births (Kanitkar and Sinha, 1989: 209). In rural Punjab the birth often takes place in a single room which is also used for cooking, eating, storage, and as a stall for cattle. The umbilical cord may be cut against a cow-dung coated floor with any sharp instrument found in the house, often a trowel or sickle; the cord is tied with a homespun cotton thread (Gordon et al., 1965: 738-739). Animal dung, ashes from dung fires, and other substances that may come into contact with the baby at birth are very dangerous for the newborn and extremely likely to cause tetanus in infants (MacCormack, 1982b). When births take place at home under unhygienic conditions and at the hands of untrained midwives or relatives the probability of maternal death is also high (Ghosh, 1989: 273).

In the early 1980s, 56 per cent of infant deaths in Bangladesh were caused by neonatal tetanus resulting from bad midwifery because most births took place at home supervised by family members or TBAs. Neonatal deaths of infants due to tetanus accounted in India for 34 per cent of all infant deaths, in Indonesia for 51 per cent and in Pakistan for 60 per cent (Foster, 1984: Table 1).

However, most births in Sri Lanka take place in institutions. A dry-zone[4] study of pregnant women in Sri Lanka indicated that nearly three-quarters of deliveries took place in institutions: general hospitals and maternity hospitals. The majority of the women, 82 per cent, were attended by doctors or by trained midwives (Meegama and Gaminiratne, 1986: 20). Among the tea plantation population, however, most women opted to deliver babies at home. A study of the plantation population in Nuwara Eliya district, where the Indian Tamil population predominates, was carried out by the Sri Lanka State Plantation Corporation (1982); it found that only 32 per cent of the births took place in hospitals. Another study in a tea estate of Nuwara Eliya district, conducted by Samarasinghe et al., (1990: 7) found that 48.7 per cent of births in that estate took place at institutions.

In the SLDCP study, among the low-country sample 97 per cent of children under age five were born in hospitals, and only nine births took place at home (Table 5.3). However, the information was not obtained for children from all areas as the questions on the conditions surrounding pregnancy and childbirth were added later to the questionnaire. The only evidence we have regarding births is from the midwives' reports. It was clear from observations in the field as well as from the interviews that in Bondupitiya many women had babies at home. Part of the reason might be the distance to the hospital, but the most important reason is a suprisingly high percentage of young mothers in de facto relationships. This seems to be related to Bondupitiya's low socio-economic status and the numerical dominance of the lowly Demala Gattara caste, which means that Bondupitiya people are less concerned with `proper' behaviour. Unmarried mothers are still not very welcome in Sri Lankan society particularly by those of higher socio-economic status such as nurses and doctors, and it is

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4 The Dry Zone in Sri Lanka is in the north-central part of the island. The area largely has an agricultural population, both in old villages and in new settlements.

the scolding they get from the hospital staff, and the problems of registering births that stop them going to hospitals for childbirth.

Table 5.3 Place of delivery of children under age 5 according to mothers' residence

Place of birth	Urban		Rural		Estate	
	SLDCP	SLDHS	SLDCP	SLDHS	SLDCP	SLDHS
Hospital	96.6	97.0	98.3	88.5	25.3	64.0
Home	3.4	3.0	1.7	11.5	74.7	36.0
Total %	100.0	100.0	100.0	100.0	100.0	100.0
N	176	586	176	2895	174	509

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

Primary analysis of Sri Lanka Demographic and Health Survey data, 1987.

The midwives from the urban poor areas reported, however, that many births in these areas took place at home, although there are hospitals nearby. The midwives say they usually attend births in the poor areas but during the floods when access is difficult, sometimes a woman has delivered her baby before the midwife's arrival. There are, apparently, no traditional midwives in the poor areas and in an emergency a family member or a neighbour has to assist at births. In one poor area the midwife had been working since 1957 and in the other area the midwife had been working since 1958; one said that she delivered three or four babies a month. The other midwife gave no numbers but implied that she usually delivered the babies at home and only sent mothers to hospital when they seemed to be in need of special care. The preference of many people from urban poor areas for home births even when facilities are close by, may indicate that the majority Muslims are reluctant for women to receive assistance from male doctors in a hospital. Nevertheless, in the urban poor areas, unlike the tea estates, births were assisted by trained midwives.

In the tea estate, in contrast to the low-country areas, the SLDCP results indicated that only one quarter of the women had had their deliveries in a hospital (Table 5.3). This finding, however, conflicted with the SLDHS results which found that close to two-thirds of deliveries were in hospitals. The difference in results from the two surveys may indicate that the tea estate we surveyed was atypical; nevertheless it was managed by the Janata Estate Development Board (JEDB) which claims to provide equal facilities to all estates. Other surveys report a surprising range of findings on this point. A study of a tea estate in Sri Lanka in the 1980s by Waxler and colleagues (1985: 386) reported that 51 per cent of recent births in the estate took place in hospital while the rest took place at home. Laing and Perera (1986: Table 4) have also reported from data for about half of the plantation sector that in 1985, 70 per cent of the births took place in institutions. However, the SLDCP's findings are supported by registration data; in 1981 only 28 per cent of all registered births in Nuwara Eliya district, where most of the estate population lives, took place in a hospital (Department of Census and Statistics, 1986a: 57). We also saw similar evidence earlier in the SLSPC (1982) study of tea plantation women in the Nuwara Eliya district. The recent evidence from Samarasinghe et al.'s (1990) study may indicate an actual increase in institutional births in the estate sector, or it could be an exclusive case. Whether or not the SLDCP estate was representative in the proportion of estate women attending hospital for childbirth, the important point is that the factors affecting women's use of hospital services are probably representative of those facing estate women generally.

The SLDCP's estate respondents gave a variety of reasons why women did not go to hospital for delivery, but the most common were the difficulties of transport, the costs involved and the poor treatment given.

Hamina is a mother of two children and 23 years old:

> when she was in difficulties in her first labour she asked for the estate lorry to be brought, but when the lorry got there she had delivered the baby; at that time some women came to help her. Her second child was also born at home and at that time the estate doctor and midwife were there. She has very difficult confinements so she has decided not to have any more babies.

Ami Nona is a 38-year-old mother of two children. Her daughter is now 15 years old and is about to have a baby. Ami Nona said:

> I had my mother to attend my first delivery (at seven months gestation) but she was dead when I was pregnant with my second child, so a traditional midwife called Harriot attended the second delivery. There were no clinics or modern kinds of medicines etc. as there are now. On the other hand my mother didn't want to send me to the hospital for the delivery because she had a lot of experience. I also do not want to send my daughter to the hospital because pregnant women are not treated well in the hospital, but the traditional midwives are not like the hospital nurses, they talk to the pregnant women very gently, and tell them how to behave during the confinement. But when they go to hospital they are afraid of the delivery and it will be difficult because the nurses and midwives do not treat them well.

Punchi Hami is 49 years old; of her eight children, seven are surviving:

> there are no obstetric facilities at the estate hospital [dispensary], so it is necessary to go to Rikillagaskada hospital, and there is no transport to get there, so babies are born at home.

Men were more likely than women to emphasize the costs involved. Manim, a 32-year-old *kangani* (overseer), and husband of Rani, 28 years, said that he sent his wife to her parents' place to have their baby:

> I thought if anything went wrong [during labour] it would be difficult for us to find a vehicle to take her to a hospital in time, as the hospitals are too far away... it is very expensive to take a pregnant woman to a hospital, because we'll have to hire a car to take her and to bring her back. Each way this will cost about 500 rupees. While the woman is in hospital, somebody has to go there at least once a day taking food for her. This will cost a lot, therefore it is cheaper to have a baby at home.

Transport is difficult because the terrain is very mountainous, hospitals are far away and vehicles are few, a major problem in an emergency. The women in the estate are eligible to use the estate lorry to go the hospital but it is often not there when needed as it transports tea leaves two days a week; furthermore they have to get their own transport to come home and it is expensive for them to hire a private vehicle. In one of the divisions of the tea estate we surveyed it is about a two-hour walk from their line houses to the major road where public transport is available. The residents also said there is a danger of being attacked by wild boars on that road at dusk.

Women in the estates usually have to work until almost the end of their pregnancies. Although one respondent said that `it is better for a woman to work during pregnancy because she will gain strength for her delivery and women who do not work have difficult deliveries', it is obvious that many women have to work as they are the major income earners in most families. A contributing factor may also be that many women did not know the exact date of delivery. Nearly half the women had no antenatal care during pregnancy and therefore had been unable to talk to a midwife or a doctor about their expected delivery date.

Some also identified an opportunity cost for the rest of the family. When someone is in a hospital a family member has to go to the hospital daily to check on the progress of the patient and consequently cannot go to work. In the estates many men were casual labourers and even if they were permanent labourers they did not get paid days off. They also had to pay to get to the hospital.

Another reason for the difference between low-country and tea estate women is that low-country women are more educated and thus are more confident in dealing with outsiders. The tea estate had only 15 women with

seven or more years of education and of them nine (60 per cent) gave birth in hospitals. This is a substantial proportion compared to other educational groups in the estate which had only 20-25 per cent of women giving birth in hospitals. The educated women in the estate are exceptions since they belonged to the handful of estate management families or the well-off Sinhalese families who were not the employees of the estate. The generally lower education levels in the estates, added to the fact that most estate women belong to the minority Indian Tamil community, meaning that they are often treated with little respect by the medical and nursing staff. The estate women therefore may prefer to have people they know at the birth. In contrast Sinhalese women, during labour and birth, are much more reluctant to be seen by persons they know, even by the family health midwife (FHM) assigned to the area. As the FHM in one of the urban middle-class areas put it, `in this area .. women are not confined at home; they would find this embarrassing'. They do not mind being seen by an unknown member of the hospital staff. An important factor here in contrast to the more conservative parts of South Asia is that Sri Lanka, and especially the Sinhalese, has never had a tradition of *purdah* where women have been restricted to the home. Sri Lanka's high education rates (apart from the estates) may be a factor in another sense. Lindenbaum (1990) found in Bangladesh that uneducated women, while restrained in front of men, are fairly uninhibited with other women, for example bathing and attending to bodily functions together. Educated girls, in contrast, while in many ways forward with men, are almost as embarassed with women they know as with men.

It is clear from the data analysis that most low-country Sinhalese give birth in institutions. Infant survival rates are higher in institutions but perhaps not so much as they should be. De Silva (1982: 222) found that 48.7 per cent of neonatal tetanus deaths in Sri Lanka occurred among

infants born in hospitals because, he argued, many Sri Lankan mothers stayed in hospital for only a few hours after delivery, increasing the risk of infection. However, in the SLDCP survey only a small proportion of mothers went home early; for example 12 per cent[5] of the mothers claimed to have come home on the first day after birth. In the tea estates, only 16 per cent of the 44 women who gave birth in hospitals came home on the day of the delivery. Of those who had babies in hospital in SLDCP, the average number of days spent in hospital in urban middle-class areas was 4.1 days, in rural areas 3.8 days and on the tea estates 1.1 days.

5.4.2 Assistance at delivery

An estimated 80 per cent or more of women in Africa and rural India are assisted by traditional midwives (WHO, 1976: 17; Barns, 1980: 312). On a worldwide basis, WHO (1979a) estimates that 60-80 per cent of women are attended by traditional midwives. In some parts of the world, assistance with birth may come from spirit mediums or herbalists as well as midwives (WHO, 1976: 11; Ebin, 1982; Maclean, 1982).

In Sri Lanka, our survey results show (Table 5.4) that, excluding the estates, nearly all urban and all rural births were attended by professionals, doctor, nurse or midwife, as most births took place in hospitals. Even the few home births reported were with one exception attended by trained midwives; only one out of the nine home births recorded was attended by a relative. The SLDCP found that in the tea estates 65 per cent of the births[6] were attended by traditional birth attendants or relatives; however, the SLDHS found only 18.5 per cent of estate births thus attended. I have already discussed in Section 5.4.1 the differences in two surveys in the proportions reported as giving birth in institutions. Apart from this

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5 Six per cent in rural areas, 18 per cent in urban areas.

6 Of respondents' children who were under five at the time of the survey.

difference the SLDHS also found a higher proportion of home births were attended by trained midwives. Responses that the birth attendant was a midwife may have been recorded as referring to a trained midwife and not followed up by further questioning to find out whether it was a local trained or untrained midwife. The Sinhalese word *vinnapuamma* means a trained or untrained midwife as does the Tamil *ayamma*.

Table 5.4 Comparison of type of birth attendant according to residence in SLDCP and SLDCP Surveys.

Type of birth attendant	Urban		Rural		Estate	
	SLDCP	SLDHS	SLDCP	SLDHS	SLDCP	SLDHS
No one	-	-	-	0.4	-	-
Professional	99.4	97.8	100.0	93.4	33.3	81.5
TBA	-	-	-	-	47.1	-
Relative	0.6	0.5	0.0	3.9	18.4	18.5
Other	-	1.2	-	1.7	-	-
No response	-	0.5	-	0.6	1.1	-
Total	100.0	100.0	100.0	100.0	100.0	100.0
N	176	589	176	2912	174	509

Sources: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.
Primary analysis of Sri Lanka Demographic and Health Survey data, 1987.

There are a government-appointed doctor and midwife on the estate but people do not seem to get their services when needed. The doctor does not normally attend deliveries (particularly when the birth is assisted by a TBA), unless the government midwife sends for him. The government midwife lives far away alone with two very young children. Her husband works elsewhere and she does not have anyone to mind her children if she is called to a confinement, especially at night. When someone goes to fetch the midwife it takes hours to get to her place; the midwife does not even have motor transport, only a bicycle to get to a place in a hurry. In contrast the traditional birth attendants live close by and they are often older females with no family responsibilities, who can attend a birth any time.

5.4.3 Why estate women decline to use hospital facilities

Although education can be considered an important determination, it is not possible to relate it with SLDCP data: first, because the women in the low-country sample all went to hospitals for childbirth, and secondly the estate numbers are too small for statistical certainty. The SLDCP in-depth interviews, however, list a number of reasons why women do not want to call the trained midwife assigned to the estate. Sethi is 36 years of age and has six children of her own. Her daughter who is 17 years old had a baby three months ago. Of her daughter's experience Sethi commented:

> The child was born in this house; an old woman from the neighbourhood helped at the birth. Though the child was born at 9 a.m., because the afterbirth was not delivered till 12 noon, they got a lorry from the estate and took Tami [the daughter] to the Rikille hospital; the doctor said that a moment's delay would have caused her death. From there she was transferred to the Kandy hospital, and she regained her health only after being given a blood transfusion and medication. At the time she was having the baby, though the midwife and the welfare officer were informed, they did not arrive till about two hours after the child was born. The estate doctor did not come...The medical facilities available in the estate are very poor, and ... the doctor, midwife and welfare officer do not give proper attention to the estate dweller's health. In order to get the lorry to go and get medicine for a patient, someone has to walk to the estate, which takes about three hours; in the meantime the patient may die while awaiting medication. They feel that essential medical equipment and medicine are not available here and that transport difficulties make it very hard for them.

When one person experiences problems with the midwife, in a close-knit community like the estates, the news quickly spreads. Even if other people have not had a similar experience they will still be reluctant to call for the service of the midwife. The TBA is one of their own and someone they feel they can trust, whereas the only trained midwife in the tea estate is Sinhalese and does not speak Tamil. This is despite the fact that the government midwife is free while tradition expects that traditional birth attendant be given a gift, usually a sari.

The practice of untrained midwives is often seen by the educated health services personnel as detrimental to the health of mother and baby because the TBA's method of delivery is not hygienic and can introduce infections (WHO, 1986; Thorne,1980 cited in Simpson-Hebert et al., 1982). A 57-year-old traditional birth attendant in the tea estate said that,

> when called upon to conduct a delivery, [she] insists on the family members buying a fresh piece of white cloth and thread from the shop. She conducts the delivery after washing her hands with soap and hot water. The scissors used to cut the umbilical cord are also washed with hot water. This instrument is not used for any other purpose. Sellaichi says the cord should be tied with fresh thread and then sealed with sterilized cotton.

Her statement gives the impression that she is merely reciting what she knows outsiders expect rather than her actual practice. It is hard to measure how sterile the instruments are or how hygienic her practice is. Furthermore, the environment in which women give birth is extremely unhygienic and this can introduce infections to the mother and baby. The responses below illustrate the estate women's experience during and after delivery regarding the care of their babies and particularly the care of the umbilical cord.

Sundai is 28 and had three years of schooling; she has already borne five children and all are alive. Her first two children were born in hospital and the three younger children were born at home and attended by a traditional midwife:

> When a baby was born a new razor blade was used to cut the umbilical cord and pepper was sprinkled on the wound to dry it. To initiate breathing in the newborn child, a little coconut oil is placed on a warmed betel leaf and the leaf is then applied to the baby's head and chest; they believe that breathing is related to the head as well as the chest.

Another woman who is 36 and illiterate had three children, all born at home with the TBA attending them:

> The umbilical cord of each of the children was cut using a pair of household scissors, which had been boiled before the delivery. A mixture of cigar ash and pepper was applied to dry up the wound; they prepare this mixture and keep it wrapped before each delivery... The umbilical cord is kept in the baby's cot for 30 days and then it is thrown into a stream after a *puja* in the Hindu temple. They believe that after this is done the *kili* (unclean things that harm people) will disappear.

A 37-year-old mother of two children, with three years schooling, has not experienced any child deaths. She reported how the umbilical cord was cut and treated when her children were born at home:

> A pair of scissors brought by the midwife was used to cut the umbilical cord; they do not know whether it was clean or not. Seven days after the birth, they applied powdered pepper and cigar ashes to the wound to dry it up. They were very careful not to wet this wound until it was fully healed. They believe if the umbilical cord is thrown out there will be a bad effect of ghosts on the infant, so they keep the cord at home forever. To initiate breathing, if necessary, they spray water on the infant's body.

A 37-year-old uneducated woman with four living children all born at home, also has not had any child deaths. Referring to the actions of her mother, an occasional traditional midwife, at the time of delivery, she said:

> to cut the umbilical cord, an unwashed knife was used, and thereafter never used again for any purpose, because they think it has been made unclean by cutting the cord; so they usually throw it away. The stump of the cord is tied with thread and the navel area is not washed for nine days until the cord has dried up; cigar ash was applied to it to hasten the drying, but nowadays doctors use some kind of powder. They kept the umbilical cord on the advice of their parents. One baby had no treatment for two hours after birth because they thought she was dead; they put her aside wrapped in a cloth. Nothing was done to initiate breathing, but after two hours she started to cry. They said if a baby did not cry within two to three hours of birth it was usual to inform the doctor and immediately bury the child.

From the health personnel's point of view these cord practices could be very dangerous for the newborn; but the estate women did not have any fears of the TBA's birth practices. Not a single mother reported an infant

death as being caused by the TBA's practice, always giving other reasons for their deaths. Often women said children died because they went blue from the cold weather in the estates as the area is mountainous, because the babies were weak at birth, because they were poor, or because the mother was anaemic. The trust they place in the traditional birth attendant during childbirth means that her service is essential.

5.4.3 Treatment of mother in the postnatal period

It is important that after the birth a woman is provided with nourishing food to increase the volume of breastmilk. In many societies, however, including Sri Lanka, women have to observe food taboos in the postpartum period as some food types are believed to cause health problems in the new mother. Rosenberg commented on Bangladesh that

> There is little knowledge of the special needs of growing children and pregnant or lactating women... For several days after childbirth, women rarely eat meat, eggs, fish or hot curries [these are considered `heating' foods] which are believed to cause indigestion; their diet chiefly consists of rice, bread, tea, and cumin seeds. Their supply of breast milk is thought to be increased by eating certain kinds of fish... The first meal of a newborn child is honey and mustard oil. These are `heating' foods which give the child strength and keep it free of colds (Rosenberg, 1973: 38-39).

In rural South India women are not allowed eat jackfruit during the first 10-15 days after birth because it is thought to cause convulsions in the baby. Foods such as bananas, eggs, eggplant, tomatoes, pumpkin and potatoes are either `cooling' or `heating' and should be avoided. The preferred type of food is rice and pepper water, which is made by boiling tamarind juice with spices and a lot of garlic. Pepper water is supposed to increase the milk supply and garlic in particular is thought to improve the milk flow (Raphael and Davis, 1985: 57).

In Sri Lanka's Sinhalese society women are also given rice and a spicy soup as the main meal in the postpartum period, at least for the first

three days. This is said to cleanse and hasten the healing process of her `stomach'[7] for the woman's womb is believed to be wounded by childbirth. After that vegetables are added to the mother's meals. Meat, eggs and fish are particularly avoided as not being easily digested. Childbirth, like puberty, is also a cause of ritual pollution and women affected are prone to evil spirits; hence foods that bring evil spirits should be avoided. McGilvray (1982: 59) reported that in his research among the Moors and Tamils of Sri Lanka,

> the new mother is generally not given food until the day following the birth, apparently because she is too exhausted. When she begins to take nourishment, she is first given *milakutannir* (`pepper water', the British `mulligatawny soup'), a hot, pungent broth heavily spiced with chillies and extra amounts of garlic. These ingredients, especially chillies and garlic, are considered to be very `heating'. Rice is often served in a mushy form ... which is considered easier to digest, accompanied by a curry made of one of the humourally [sic] `neutral' varieties of small lagoon fish... The new mother will be given coffee—heating, as opposed to tea, which is cooling—or at the very least hot water, to drink ... In short, there is a very strong emphasis on `heating' foods and substances in post-natal diet, while at the same time, there is a very strict prohibition on fruits (generally cooling), milk and yoghurt (cooling). There is explicit anxiety that the new mother may suffer `cool illnesses' ... and this danger evidently arises from the abrupt loss of the mother's blood and bodily heat when the baby is born. There are at the same time other medical concerns, particularly the need to stop the bleeding and to promote the rapid healing of what are considered to be the wounds within the mother's womb. Milk and yoghurt are said to inhibit the healing of wounds and to cause wind and indigestion; it was for these reasons, rather than their `cooling' quality, that most people forbade their consumption. At some point, the desire to generate `heat' within the mother's body must conflict with the desire to `cool' and heal her wounds, since heat agitates the blood and aggravates all open sores. The conventional compromise is to restrict the intake of some strong or heating foods, such as chicken, beef, or eggs, until the mother's condition has improved, while just as during the female puberty rite, an oral dose or two of margosa oil (extremely cooling) is administered to cool and heal the womb itself (McGilvray, 1982: 59).

Samarasinghe et al. (1990: 23) found that Indian Tamil women in their plantation consumed approximately 8 per cent less than the recommended calorie intake during pregnancy and lactation. This was often because they were too poor to afford much or varied food, and also

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7 Usually the word for `stomach', *bada* in Sinhala, is used also to mean `womb'.

because of women's subordinate position within the family. It is customary in Indian Tamil households for men to eat first, followed by the children and women. A cultural practice of giving alcoholic drinks after birth for 30 days was also noticed by Samarasinghe and others (1990: 37) in their tea estate study.

The SLDCP results showed the continuing importance of food restrictions on mothers' diets, among both low-country and estate women. Respondents said that after childbirth a woman's body is cool and she has to be careful not to eat too much cooling food, in contrast to the pregnancy when the woman's body is warm and she cannot eat `heating' food. Podi Hami, one of the respondents, said that

> sometimes mothers get chilled after delivering a child because they have suddenly lost the warmth; for this Western medicines are no good, so it is important to do rituals like tying threads or using charmed oil.

For this reason, after childbirth, women consume foods that warm their bodies. Among the Sinhalese, the new mother is given a warm bath, usually a herbal bath, during the postpartum resting period. After a bath she will be given a cup of hot coffee or tea and roast garlic to eat.

A low-country Sinhalese respondent described, from her experience, the generally expected behaviour of a new mother:

> When the children are babies the mother should act carefully. From the baby's birth up to about two months the mother should use ginger, garlic and coffee. Until two or three weeks she should eat rice with chilli curry, so she can be healthy and the baby also becomes healthy. The babies do not catch any diseases like stomach aches or colds. Till the baby's age was one month the mother should not bath it. Also she should not drink cold water. They think these conditions are good for the baby's health. First she bathed herself with boiled water with some medicinal leaves of *adathoda, belli* and *eradu*...If the mother had a bath she did not breastfeed the child until her hair became dry. They believe it is not good for the child's health. Sometimes the baby may catch cold.

An estate Tamil woman explained how a mother during the post-natal period should eat:

> Roasted bread was given to the mother after delivery during the first five days, because they believe the stomach is not in a proper state to digest heavy food. After the fifth day the mother was given rice with chicken to regain the strength lost during the delivery. However, at the same time chilli soup is given because they believe that the mother has wounds in her stomach after the delivery and this soup is given to dry up those wounds.

The traditional birth attendants interviewed in the SLDCP survey explained that women were administered an alcoholic drink (arrack[8]) straight after birth, partly as a recovery from the shock and also to accelerate the expulsion of the placenta.

The practice of giving less nutritious foods in the postpartum period may adversely affect the health of the mother and it may also reduce the milk flow. However, the food taboo generally lasts for only three days and then the woman will be given nutritious foods, mostly yams that are believed to be high in protein, and pulses, to improve the volume of breastmilk which is recognized as being very important for the baby's growth.

5.5 Patterns of infant feeding and child health

Proper infant feeding is essential for the general health and the physical growth of a child. It can also be beneficial for maternal health as prolonged breastfeeding often results in longer periods of postpartum amenorrhoea, consequently providing a natural form of birth spacing (Sharma and Rutstein, 1991: 403).

Breastmilk provides all the necessary nutrients for the growth and development of the infant in the first four months of life and after that it

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8 Arrack is made of distilled toddy.

becomes necessary to introduce supplementary foods as brestmilk alone is not adequate to sustain growth (Jelliffe, 1955; Jelliffe and Jelliffe, 1978a; Bhatia et al., 1979: 10; Sharma and Rutstein, 1991: 403). Supplementary foods should be introduced from four months of age and increased after six months (WHO, 1979b; Latham, 1982). Additional foods introduced before that period are not only unnecessary but can be harmful and physiologically inappropriate, exposing the infants to infections such as gastro-enteritis common in insanitary environments (WHO, 1981: 2). Supplementation, particularly bottle feeding, can also interfere with breastfeeding; the frequency of suckling may be reduced as a result so there is a reduction in the supply of breastmilk. A child accustomed to bottle feeding may be reluctant to accept the breast and so not receive the immunizing benefits of breastmilk (Jelliffe, 1955; WHO, 1989).

Supplementary foods have been identified as the major source of infection during infancy (Black et al., 1982). Unclean cooking utensils, contaminated foods and water and inadequate personal hygiene in food handling can introduce infections and lead to diarrhoea among young children (Martorell et al., 1985: 19; Sharma and Rutstein, 1991: 403). Careful preparation, storing and handling of supplementary foods are necessary to protect children's health.

5.5.1 Commencement of breastfeeding

Breastmilk is the most important type of food for newborn babies because it provides them with the nutrients necessary for their growth, including taurine which is essential for the development of the brain (UNICEF, 1986), and it contains vital antibodies that protect the infants from infectious diseases (Jelliffe and Jelliffe, 1978b; Mata, 1978). Breastfeeding is especially valuable for low-birthweight babies who have

very low levels of blood sugar; early breastfeeding protects them against hypoglycaemia (Ebrahim, 1979: 70).

Breastmilk initially appears as colostrum, a concentrated yellowish fluid in a quantity of about 25 millitres during the first 24 hours. Colostrum is especially valuable for the infant since it is even richer than ordinary breastmilk in antibodies against pathogens; 65 per cent of its proteins are antimicrobials (UNICEF, 1986; Meegama and Gaminiratne, 1986: 28). Colostrum is also important for development of the infant's immune response (Bhatia et al., 1979: 10). The small amount and strange colour of the milk at this stage misleads many health workers and mothers into feeling anxious that the mother's own product might not be enough to feed the baby. Because of this, many women resort to prelacteal or supplemental formula. The result is less suckling, and therefore less breastmilk supply. In many cases, this process ends in breastfeeding being abandoned altogether.

Even worse, in many societies, there are taboos against the feeding of colostrum to babies at all, with the mothers feeding the babies sugar water, a variety of teas and other liquids. In Central America, oil is fed to the baby to purge the gastrointestinal tract of the meconium (Martorell et al., 1985: 19-20).

> In some cultures, colostrum is considered dirty and stagnant and is deliberately expressed and discarded. Some mothers discard only the first few drops of colostrum while others discard all the colostrum for three days. Meanwhile the child is usually fed on sugar and water or on infant formula and is thereby deprived of the anti-infective cellular components in colostrum which engulf and kill virus, bacteria, and fungi (Meegama and Gaminiratne, 1986: 28).

McCann and colleagues (1981: 549) report that

> in some societies breastfeeding is discouraged by separating the mother and infant immediately after birth, administering lactation supressants, offering

> unnecessary supplementary bottle feedings, establishing inflexible feeding schedules, and, during labor, performing episiotomies routinely, causing the mother pain which interferes with `let down' [reflex] and administering certain drugs ... which may impair a newborn infant's ability to suckle.

In many parts of India, the newborn are not breastfed for the first three days, thus being deprived of colostrum. A study of five districts including both rural and urban areas of Karnataka state, India, found that 89 per cent of the mothers had not breastfed their babies for the first three days. Many women felt that they had no milk (which probably meant that the colostrum did not look like milk) or that colostrum was bad for the baby. Others felt that the baby's stomach should `come clean' before it was given breastmilk. Instead babies are given castor oil and honey, sugar solution, animal milk, a solution of jaggery, or tamarind and castor oil, some of which are given to cleanse the stomach (Reddy, 1990: 599). A similar situation prevails in Gujarat (Visaria et al., 1990: 635-636).

In Bangladesh the breastfeeding is not started at least until the third day following the delivery; in the meantime the baby is usually given honey mixed with mustard oil and occasionally warm water. In many developing countries babies are fed warm water and herbal decoctions for the first three to five days after birth to induce diarrhoea to `clean out' their insides (Bhatia et al., 1979: 9-14).

Such an attitude apparently prevailed in Sri Lanka in the past. Meegama and Gaminiratne (1986: 28) found that in their study areas of the dry-zone districts of Sri Lanka, where official figures show very low mortality levels, 46 per cent of the women delayed breastfeeding until the second day or later after the birth and 34 per cent of the women threw away colostrum completely. This, however, compares favourably with figures from neighbouring India.

On the whole, Sri Lanka's health professionals seem well aware of the importance of early breastfeeding. The attitudes of the different

categories of health care personnel towards breastfeeding are encouragingly positive as reported in a recent study by Covington and others (1985) who found that among 36 health care personnel in Sri Lanka nearly all gave advice on breastfeeding. However, overcrowding of maternity hospitals may cause the early discharge of mothers and babies making the follow-up action somewhat less practicable (Soysa, 1981). Family health workers (FHW) are, however, supposed to visit mothers after they leave hospital and advise them on such matters.

The survey question on the commencement of breastfeeding was asked only in one of the low-country urban middle-class areas and on the estate. The data from SLDCP showed that 87 per cent of the 174 urban middle-class children under five were breastfed on the day of birth, 10 per cent on the second day and the final three per cent on the third day. In the estate only 41 per cent of the 170 children under age five were breastfed on the day of birth. A further 36 per cent were fed on the second day and the rest were fed on the third day or later.

However, estate mothers with some education are marginally more likely to initiate breastfeeding on the day of birth. Of the mothers with no education only 33 per cent initiated breastfeeding on the day of birth compared to 45 per cent of mothers with 1-3 years of schooling and 52 per cent of mothers with four or more years of schooling.

Mothers were asked to state the types of food given to babies before breastfeeding. In the low-country middle-class area 151 babies were breastfed on the first day. Of the 23 children who were first breastfed on the second or third day, 39 per cent were given boiled water only before breastfeeding, a further 26 per cent glucose water, 22 per cent milk powder and three children (13%) were fed nothing. On the estate, for 59 per cent of the children (N=101) breastfeeding was initiated on the second, third or

even fourth day after birth. In the meantime 79 per cent were given glucose water or sugar water, 13 per cent herbal juices or oils, three per cent boiled water, two per cent powdered milk and three per cent were given nothing. Some of the specific liquids given to infants by the mothers on the estate are described below.

The area midwives interviewed in the SLDCP in both the low-country areas and the estate all say they encourage breastfeeding on the day of the birth, and tell mothers the advantages of early breastfeeding stressing its high nutritive value and its protection against disease. There seems to be some disagreement among the midwives as to the exact hour that women should commence breastfeeding: this varies from two to eight hours after the birth. Some of the midwives said that a baby did not need to be fed for several hours after the birth as the baby was sleepy and should only receive boiled water. Nevertheless all the midwives encourage the feeding of colostrum. Interestingly, the few low-country women who did not breastfeed early were Burghers, who are the descendants of the Portuguese and the Dutch. It is possible that many of these women did not breastfeed at all. The estate women, more often, however, depend on advice of the TBA who advises women not to commence breastfeeding infants until the third day and to feed them only with glucose and warm water for the first two days.

Other reasons for delaying breastfeeding, and information on postpartum feeding, were given by estate women in the interviews. Selli is a 28-year-old mother of five children. She, like many other women on the estates, went to school only for three years while her husband had five years of schooling; they both work as labourers on the estate. She said that when her children were born at home,

> the babies were breastfed one day after the birth. On the first day after the baby's birth it is given boiled [cooled] water to drink because it was believed that the child's throat was not strong enough to drink breast milk on the first day. After the second month, cow's milk was given in addition to breastmilk; both were given twice a day.

Cella, a 27-year-old Tamil tea picker, has two children. She went to school up to Grade 2 and her husband, who works as a watchman on the estate, went to Grade 5. She is a tea picker on the estate and she had both her children at home assisted by a traditional midwife:

> breast-milk was given to all the children three days after their birth. During the first three days they were given *hato* [mushroom] ... since this *hato* is a small plant which they can find easily in the estate; the juice was given to babies to prevent constipation.

Waima is a Sinhalese, and the wife of the postman in the area; she is 37 and has four children. She has never been to school and her husband has been to school up to Grade 4. She works as a tea picker on the estate and she explained how she fed her children when they were born.

> After a baby was born it was not breastfed till the third day; only glucose was given during that time. It was not given colostrum which was believed to cause diarrhoea. The colostrum used to be expressed without anyone seeing; they believed if someone saw the colostrum they would think the mother's breasts were diseased.

Rani, a Sinhalese woman with three living children, works as a tea picker on the estate; one of her children was stillborn. She is 41 and both she and her husband were educated to Grade 5. Her husband works as a labourer in Colombo and comes home only once a month:

> the children were not breastfed till three days after birth. Only castor oil was given twice a day during the first three days. They believe that a woman does not have breastmilk until she is bathed three days after the delivery. Colostrum was not given to the babies because she thinks it is dirty.

Another Sinhalese respondent, Manika, an illiterate 31-year-old widow with two children said `We believe that colostrum is dirty, so we do not believe in giving it to babies'. The aversion to the use of colostrum is less based on ritual belief than on a perception that it is dirty, as being the consequence of milk that has accumulated during pregnancy, and is like stagnant water.

5.5.2 Duration of breastfeeding

World Fertility Survey (WFS) data from various countries show high levels of breastfeeding prevalence in developing countries, and near-universal breastfeeding in all South Asian countries, with rural women breastfeeding longer than urban women (Kent, 1981). Bhatia et al. (1979: 9) reported that in rural Bangladesh the breastfeeding extends from birth to the next pregnancy. If there is no subsequent pregnancy, lactation is terminated when the child is three and a half to four years (Chen et al., 1974: 277). The WFS findings show that in Sri Lanka 96 per cent of women breastfed their children: rural women on average breastfed their babies for 16.7 months and urban women breastfed for 12.8 months (Kent, 1981). The SLDHS results for 1987 surprisingly showed much longer breastfeeding: the average duration of breastfeeding being 17.5 months in urban areas, 23.6 months in rural areas and 21 months in the estates. The reason for the increased duration of breastfeeding during the inter-survey period—SLWFS and SLDHS—is not clear.

Table 5.5a exhibits the characteristics of the breastfeeding mothers in SLDCP survey. In calculating breastfeeding duration I have included all currently breastfeeding children up to 36 months, using the current status mean (CS Mean) method explained by Grummer-Strawn and Trussell (1993). The formula for the method is:

CS Mean = 1/2 S(0) + ΣS(i)

Where Survivorship curve S (i) = StillBF(i)/N(i);

StillBF(i) = number of children aged i still being breastfed,
N(i) = total number of births i months ago.

The SLDCP results in Table 5.5a were in between though closer to SLDHS figures. The mean duration of breastfeeding in the estates was 19.8 months; in rural areas 20.1 months; and in the urban poor areas 16.5 months; and the shortest period, as expected, 15.9 months in the middle-class areas.

Table 5.5a Mean duration of breastfeeding in months, children born in the last three years before survey by selected characteristics of the mother, in SLDCP survey.

Characteristics	Length of breastfeeding	Number of women
All women	18.0	750
Area of residence		
Urban middle-class	15.9	170
Urban poor	16.5	217
Rural	20.1	252
Estate	19.8	100
Age		
15-29	18.8	479
30-49	16.8	268
Education		
0-3 years	19.6	225
4-6 years	18.9	185
7-9 years	16.9	137
10 or more years	16.5	192
Working status		
Working	17.0	178
Not working	18.5	566
Ethnicity		
Sinhalese	18.4	517
Indian Tamil	19.5	104
Moor	15.7	124
Religion		
Buddhist	18.6	467
Hindu	18.4	93
Muslim	15.4	124
Christian	18.6	65

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

Urban poor women exhibit a shorter duration of breastfeeding after middle-class women, and rural and estate women breastfeed for equally long periods. The shorter duration of breastfeeding among the Moors is unexpected and can only be explained by two reasons: their urban residence and Moor culture. Education does not explain the shorter breastfeeding among the urban poor women as they are generally less educated than other urban residents.

Working mothers in the SLDCP sample have a shorter duration of breastfeeding than the non-working women but the difference is less than might have been expected. This could mainly be related to the fact that many of the survey respondents who worked were estate women who had a long duration of breastfeeding. Ethnically the estate women are Indian Tamil the category which breastfeed the longest.

Education among the SLDCP population is a factor in duration of breast feeding, but its effect is less than might have been expected. Table 5.5b indicates that the area in which the respondent lives is a more important indication of duration of breastfeeding than is education, perhaps because of the associated socio-cultural characteristics such as ethnicity and religion.

Table 5.5b Mean age (in months) of breastfeeding[a] [b] by mother's education and residence, SLDCP.

Area	Mothers' education (years)			
	0-6	**7-9**	**10 +**	**N**
Urban middle-class	18.5	14.2	15.7	170
Rural	21.5	20.1	18.0	252
	0-3	**4-6**	**7 +**	
Urban poor	18.0	16.7	12.6	217
Estate	20.3	19.0[c]		100

Notes: a Currently breastfeeding children aged 0-36 months only.
b Due to small numbers involved mean duration of breastfeeding was calculated using the method proposed by Page et al. (1982: 31). Means are calculated for children currently being breastfed using the equation ($\dot{Y}=B/\tilde{N}$)
In this equation, B = total number of children currently breastfed
$\tilde{N}$ = the average number of births per month
c Refers to education of 4 years and over.

Source: Primary analysis of Sri Lankan Demographic Change Project, 1985 and 1987.

Overall in SLDCP areas women breastfeed boys one month longer than girls: 18.6 months for boys and 17.6 months for girls[9]. This difference was found in all areas except the urban poor areas where there was a negligible difference. This is a surprising difference given the evidence above that in general treatment is fairly equitable between boys and girls; for example the SLDCP found no difference in health treatment by sex. The difference in breastfeeding, though slight, may help explain Langford and Storey's finding that girls 1 to 4 years remain subject to higher mortality than boys in Sri Lanka. The explanation, I believe, is a general perception that boys are more energetic and require more nourishment than girls. It may, of course, be self-fulfilling in that undernourished girls are likely to lack energy.

5.5.3 Supplementary feeding of infants

The age when supplementary food is introduced varies greatly in different societies (WHO, 1981). In many societies supplementary foods are

9 Also calculated using the method proposed by Page and others (1982).

introduced earlier in urban areas than in rural areas; in India in both urban and rural areas women introduce supplements very late. Even at the age of 6-7 months only 19 per cent of urban infants and 12 per cent of rural infants were given supplementary foods. Similarly, in Nepal mothers introduced solids very late (Martorell et al., 1985: 23). Breastfeeding supplementation in rural Bangladesh usually starts after the child is 10-11 months, a delay which Bhatia et al. (1979: 10) relate to prolonged lactation. Furthermore, even when supplementary food is given to babies it is often nutritionally inadequate. In Bangladesh, for example, is generally consists of gruel made out of powdered rice.

The child growth fact sheets distributed by maternal and child health clinics in Sri Lanka state that infants should be introduced to liquid and solid foods at the age of 4-5 months. The 1987 SLDHS findings confirm that the mean age at which supplementary feedings are introduced lies within the recommended range, with estate mothers introducing supplements much earlier, at 2.6 months (Table 5.6).

Table 5.6 Mean age (in months) at which supplementary food was given by mother's education in all areas in SLDHS.

Area	Mother's level of education				
	No schooling	Primary	Secondary	Higher	Total
Urban	4.63	4.54	4.23	2.97	3.92
Rural	4.86	5.15	4.49	3.94	4.59
Estate	2.41	2.53	3.03	4.11	2.61
Grand mean	3.80	4.59	4.38	3.73	4.23
N	434	1131	1336	820	4010

Notes: Never supplemented category is excluded when calculating means.

Source: Primary analysis of Sri Lanka Demographic and Health Survey, 1987 data.

Analysis of SLDCP data, however, reveals that Sri Lankan mothers in urban middle-class and rural areas introduced supplementary feeding early (Tables 5.7a and 5.7c), usually liquid supplements such as powdered milk, fruit juices and rice water (see Table 5.9 for a list of common foods

given). Mothers in urban poor areas and estates started supplements later, but close to the officially recommended ideal age (Tables 5.7b and 5.7d). Statistically significant differences were shown by mother's level of education in urban middle-class areas and the estate. However, the difference in the estate is the reversal of the situation in the low country: it is uneducated mothers who are supplementing earlier than their educated counterparts.

Table 5.7a Age at which breastfeeding was supplemented, by mother's education, urban middle-class (per cent)

Age given (months)	**Mothers' education level (in years)**				
	No or 1 - 6	7 - 9	10+	Total	N
1 month or under	48.1	21.5	39.5	36.0	111
2 - 3	26.9	47.6	33.1	36.0	111
4 - 6	17.3	8.3	7.0	9.1	28
7 +	3.8	7.1	3.5	4.5	14
Never supplemented	3.8	15.5	16.9	14.3	44
Total	100.0	100.0	100.0	100.0	
N	52	84	172	308	
Mean age at supplement[a]	2.55	2.91	2.10	2.40	

Notes: a Never supplemented category is excluded when calculating means.

Source: Primary analysis of Sri Lankan Demographic Change Project data 1985.

Table 5.7b Age at which breastfeeding was supplemented, by mother's education, urban poor areas (per cent)

Age given (months)	**Mothers' education level (in years)**					
	No or 1-3	4 - 6	7 - 9	10+	Total	N
1 month or under	18.3	20.2	31.0	40.7	22.8	89
2 - 3	32.3	30.6	21.1	25.9	29.2	114
4 - 6	18.4	19.4	19.7	7.4	18.2	71
7 +	17.1	16.4	9.9	18.5	15.6	61
Never	13.9	13.4	18.3	7.4	14.2	55
Total	100.0	100.0	100.0	100.0	100.0	
N	158	134	71	27	390	
Mean age at supplement[a]	4.40	4.13	3.56	3.84	4.12	

Notes: a Never supplemented category is excluded when calculating means.

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985.

Table 5.7c Age at which breastfeeding was supplemented, by mother's education, rural areas (per cent)

Age given (months)	Mothers' education level (in years) No or 1-3	4 - 6	7 - 9	10+	Total	N
1 month or under	36.0	36.7	30.3	34.1	34.3	174
2 - 3	30.7	27.4	41.3	34.7	33.5	170
4 - 6	19.3	23.1	14.7	19.8	19.3	98
7 +	7.0	7.7	7.3	5.4	6.7	34
Never	5.3	5.1	6.4	5.4	6.2	31
Total	100.0	100.0	100.0	100.0	100.0	
N	114	117	109	167	507	
Mean age at supplement[a]	2.87	3.00	2.78	2.75	2.84	

Notes: a Never supplemented category is excluded when calculating means.

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985.

Table 5.7d Age at which breastfeeding was supplemented, by mother's education, estates (per cent)

Age given (months)	Mothers' education level (in years) No schooling	1 - 3	4 - 6	7 +	All women	N
1 month or under	25.0	14.9	8.9	4.8	15.0	27
2 - 3	44.6	31.9	25.0	23.8	32.8	59
4 - 6	21.4	21.3	33.9	52.4	28.9	52
7 +	1.8	14.9	8.9	4.8	7.8	14
Never	7.1	17.0	23.2	14.3	15.6	28
Total	100.0	100.0	100.0	100.0	100.0	
N	56	47	56	21	180	
Mean age at supplement[a]	2.86	4.36	4.28	4.33	3.82	

Notes: a Never supplemented category is excluded when calculating means.

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1987.

Many children were reported as not being supplemented in all except rural areas. Most of those children who were never supplemented were over one year of age. In rural and urban middle-class areas it was the educated mothers (with seven or more years of education) that reported not supplementing their breastmilk; in urban poor areas and the estate it was the less educated, with no schooling or less than six years. This is puzzling, unless there were some errors in the reporting because mothers did not

believe the supplements contributed much to their children's daily food intake. Often when mothers insist, out of pride, that they have breastfed children for a long period without giving any commercial milk, reporting errors can occur.

Solid foods are introduced quite late in Sri Lanka. SLDCP survey results indicate that on the average children are given solids at the age of 6.7 months (Table 5.8). Mothers in urban middle-class and rural areas start introducing solids earlier than urban poor mothers and estate mothers: the difference is highly statistically significant. Similarly, the age at which solids were introduced to infants by rural and urban middle-class mothers also differs significantly (see Appendix 5.1). The impact of education on solid supplement was limited, except for estate mothers with seven or more years of education. Because of this an analysis of variance test showed only a moderate level of statistical significance between the education of mothers and the age at which solids were introduced (see Appendix 5.2). However, the number of mothers with 10+ years education in the surveyed estate area was only 21, a number inadequate to provide definite evidence. The education level of mothers in urban middle-class areas, in contrast, does affect the age at which they introduce solid supplements to children, a difference that is statistically highly significant. Mothers in urban middle-class areas generally start solids rather early, 5.3 months, but the more educated the mother the earlier the start. Rural mothers show a uniform pattern of introducing solids across the different educational categories (Appendix 5.2).

Early supplementary feeding may lead to diseases among young children when it is associated with unhygienic food handling and methods of preparation (WHO, 1981). This, however, is not apparent in the Sri Lankan evidence, probably because the early supplementation occurs in areas where health standards are high in general. The areas where mothers introduced

supplements early include those where children survive longest. The urban poor and estate areas, where solids are introduced late, have higher infant mortality levels and high rates of malnutrition among young children. This is presumably because the more educated mothers, typical of the urban middle-class and rural areas, who supplement early, are in other ways very aware of the need to care for children and the need to be clean; they are also more likely to attend baby clinics where they are given proper advice on hygiene. Furthermore, the more educated women are generally better off and able to afford supplementary foods for their children.

Table 5.8 Mean age at which breastfeeding was supplemented with solids, by mother's education in all areas (per cent)

Mothers' Education	**Areas**				
	Urban middle-class	Urban poor	Rural	Estate[a]	All areas
No or 1-3 years		7.89	6.06	7.45	7.04
4 - 6 years	6.72[b]	7.01	6.09	8.31	7.06
7 - 9 years	5.31	8.12[c]	6.59	7.87	6.97
10 years or higher	4.84		6.00	6.12	6.20
Total Mean	5.30	7.63	6.21	7.61	6.72
N	185	218	134	132	666

Notes Never supplemented category is excluded when calculating means.
a Education categories for the estates are `no schooling' `1-3 years' `4-6 years' and `7+ years'.
b Refers to 0-6 years of education.
c Refers to 7+ years of education.

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

In the tea estates nearly all mothers worked from 7 a.m. to 5 p.m. while someone else, often a child's older sibling, looked after the younger children. When facilities were available they sent children to the creche, but the creche was staffed by only one person. Mothers brought food from home for the children but there was no proper place at the creche such as a refrigerator or even a cupboard, to store it. Often the creches were single

rooms with no sanitary facilities. In the urban poor areas the majority of the population was Muslim and many women had been to the Middle East to work for some time, leaving the young children under the care of the father and the older siblings or grandmothers. The overcrowding of the poor areas, and poor food handling and storage, may be expected to introduce many bacteria and infections to young children, causing diseases such as diarrhoea. Consequently, how and by whom the food is handled was much more important in the survey areas than the age at which supplementary food is introduced.

The types and amounts of supplementary food given to a baby are important because such food should provide adequate nutrition for the growing child. It is possible to ask questions on the types of food given to a child, but it is very difficult to get the exact amounts of foods given to children, particularly as mothers often feed children from their own plates. Table 5.9 lists the various types of liquid and solid supplements given to children in SLDCP and the proportions of children who received them.

In our survey most children received powdered milk, 40-60 per cent, in all areas. King coconut juice and rice water were given, mostly by the Sinhalese. Orange juice was also a common form of liquid supplement and commercially available juices were given by urban middle-class mothers.

Bread, biscuits, vegetables, eggs and banana are the most common solid foods given to children. Estate mothers mostly gave bread and biscuits as supplements and vegetables were very rarely given, probably because of the scarcity of such food in the estates. Although the estate workers in theory were allocated garden land, in practice such land was monopolized by the officials of the estate. Some estate people also said that `pesticides used in vegetable growing make children sick and that vegetables should not be

bought from the market'. The lack of nutritious food may make estate children malnourished and more vulnerable to disease.

Table 5.9 Percentage of children under age five years who received different types of liquid and solid supplementary foods by area.

	Areas			
Types of liquids	Urban middle-class	Urban poor	Rural	Estate
Powdered milk	43.7	48.6	48.2	46.8
King coconut juice	26.8	13.8	46.1	11.5
Orange juice	39.0	24.8	48.9	38.5
Commercial fruit juices	29.4	10.3	14.2	9.6
Soups	18.2	8.9	15.6	2.6
Coriander water	35.5	31.2	51.1	35.9
Other herbs	5.2	2.8	7.8	- -
Canji/rice water	48.5	25.5	36.9	19.2
Other liquids	44.6	29.1	33.3	12.8
Total	231	282	141	156
Types of solids				
Rice	11.2	27.4	11.2	25.4
Other cereals	26.6	13.2	8.2	11.2
Biscuits/rusks/bread	72.3	49.8	85.1	73.1
Banana	33.5	7.3	53.7	17.9
Other fruits	27.7	16.9	33.6	11.2
Potatoes	40.4	29.7	44.0	20.2
Other vegetables	97.9	88.1	98.5	8.2
Eggs	38.8	24.7	38.1	14.9
Other solids	6.9	8.7	5.2	- -
Total	188	219	134	134

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

5.6 Immunization of infants and children

Immunization of infants and children can effectively prevent the major killer diseases, tuberculosis, diphtheria, pertussis, poliomyelitis, measles and tetanus in childhood (McMurray and Nzima, 1991: 1; Diamond et al., 1991: 1475-77). WHO's Expanded Program of Immunization (EPI) promotes four vaccines for children, BCG, DPT, polio and measles vaccines

against the first five diseases mentioned above and tetanus toxoid vaccine for women during pregnancy (McMurray and Nzima, 1991: 1).

Immunization services have been available in Sri Lanka since the 1960s with coverage expanded in 1978-79 to include the EPI activities (DCS, 1988: 103; Diamond et al., 1991: 1480). It is recommended by the program that children should be fully immunized between the first and ninth months of life (DCS, 1988: 103). The following immunization schedule is advised by the public health midwives to the mothers in the survey areas.

Vaccine	**Recommended Age**
BCG	within 24 hours of birth
DPT 1, polio 1	3 months
DPT 2, Polio 2	5 months
DPT 3, Polio 3	7 months
Measles	9 months
Measles booster	18 months
DPT booster	5 years - at school

The SLDCP collected immunization records from all living children under age 20 and when the health card was available the details were recorded directly from it. In other cases the information was obtained from the mother or other responsible adult in the household. The immunizations received as an infant and also at a later age were recorded because sometimes children miss the vaccine when they have a cold, which was quite common in the survey areas. In that case the child is immunized later.

5.6.1 Types of immunization

Table 5.10a presents the data on the proportions of children immunized by area in SLDCP and Table 5.10b presents similar information from SLDHS. In the SLDCP survey nearly all children under age five in urban middle-class areas were immunized as infants while in urban poor and rural areas 97 per cent were. In the estates, however, only 85 per cent of the children were immunized as infants. The difference is made up, to

some extent, by the immunization of children at later ages. In rural and urban middle-class areas immunization coverage is reasonably good compared to other areas. Urban middle-class and rural areas show universal BCG coverage which could be the result of hospital births. Even in urban poor areas BCG coverage is fairly good, probably because the childbirths are attended by professional midwives and on their regular visits to mothers and babies after birth they encourage mothers to get children immunized. It is interesting, however, that only just over half the children under five in urban poor areas and only half the children under five in the estates have received polio vaccine. Since both DPT and polio immunizations were given at the same time it was expected that similar proportions of children would have received both vaccines. It is not clear whether the under-use of polio vaccine among the urban poor is due to consumer resistance or because it is not available. Both the SLDHS and especially the SLDCP recorded much lower levels of measles immunization than innoculation with BCG, DPT and polio vaccine. Part of the explanation is that inoculation against measles only started in 1982 and that it may have taken time to be fully accepted. This would have affected both surveys but particularly the SLDCP main sample which was taken in 1985, when especially those children three and four years may have largely missed out on universal measles immunization. Measles immunization rates were also affected by a widespread belief in Sri Lanka that measles is a disease caused by a goddess and to prevent it would be defying her will.

Even given the earlier timing of the main survey of the SLDCP and the fact that it was conducted only two years after the adoption of universal inoculation against measles, the much lower rates of measles vaccination recorded in the SLDCP than in the SLDHS is surprising. I cannot comment

directly on the methodology of SLDHS as I did not work on it. However, in large-scale surveys there is pressure on interviewers to undertake as many interviews as possible within a short time; consequently they are likely to accept the respondents' answers that they have taken all the inoculations. In contrast, in the SLDCP the interviewers checked the data on inoculations using the respondents' own health cards; therefore, the SLDCP is extremely accurate in this matter.

Table 5.10a Type of immunization received by children under five years by residence (per cent)

Type of immunization	**Residence**			
	Urban middle-class	Urban poor	Rural	Estate
BCG	99.1	95.4	100.0	87.6
DPT	100.0	90.8	96.8	64.6
Polio	94.5	58.6	96.8	50.0
Measles	9.1	2.3	14.5	6.8
N	310	394	178	161

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

Table 5.10b Type of immunization received by children under five years by residence, SLDHS 1987 (per cent)

Type of immunization	Residence		
	Urban	Rural	Estate
BCG	96.0	99.0	96.0
DPT	78.0	80.0	82.0
Polio	78.0	80.0	81.0
Measles	48.0	47.0	65.0
N	547	3157	277

Sources: Primary analysis of Sri Lanka Demographic and Health Survey data, 1987.

Estate mothers in the SLDCP are much less likely than others to have their children immunized; even when they do, this is usually when the children are older. It was reported during the fieldwork that an immunization clinic is held on the estate on the third Thursday of each month by a team from Kandy. Each division has a pick-up point and tea lorries are used to pick up mothers and children; yet even so the immunization coverage is surprisingly low. This is probably because all the estate mothers work for daily wages and they do not want to lose their earnings. However, it is apparent that estate parents have less appreciation of the benefits of immunization. This may be an indication that health education is weak on the estate, and it may also reflect the low education levels of estate parents. Consequently child sickness and deaths may be seen as due to their poverty. One of the SLDCP interviewers noted:

> While I was doing this interview the welfare officer came to this house. She told Krishya, the little girl in this house, to go to the other houses and ask all the children who had not had their BCG injection to come to this house. Once the child went and gave this message a number of little children came. Krishya, who is eight, had not had the BCG injection, and neither had three other children aged 11 or 12. The welfare officer established that these four children had not had the BCG injection and she took them with her, but she did not seem to be taking the trouble to go to the other houses. She later said to me that a special doctor was coming to the estate and that was why she was doing this inspection.

Clearly it would have been better if the welfare officer had talked to the parents of the young children to find out those who had not received any

vaccination rather than asking the children, most of whom presumably would not have known their immunization status. Even if she did not want to visit each household she could have given the message to all the women at once at their morning assembly. Improving the health situation of the estates will require overcoming the communication gap between the higher officers and the estate workers.

According to Sri Lankan law children should be immunized against all the childhood diseases for which vaccines are available, and evidence of this should be shown before they can start school. Therefore, low-country Sinhalese who are very interested in educating children are more likely to immunize children promptly. However, since the measles vaccine is not compulsory it is not taken seriously. The Muslim majority in the urban poor areas are less concerned with educating their female children and may not therefore get them immunized. Parents in the estate too had little interest in education: the tea estate surveyed had school buildings but classes were very irregular. The schools usually only had one teacher who was often absent, most teachers being Sinhalese or Sri Lankan Tamils who do not closely associate with the Indian Tamils of the estates. There were no officials who checked on the attendance in schools. Since the medium of instruction was mainly Sinhalese in these schools most Tamil estate parents felt that the schools were not suitable for their children. Sinhalese estate people, on the other hand, felt that they should have Sinhalese schools on the estate for their children as the Tamils were not interested in education at all. However, the schools did not have an adequate administration, and consequently the parents may not have been required to provide evidence of the immunization status of their children.

5.7 Summary and Conclusions

This chapter builds on Chapter 2 which found that mortality levels differ between the study communities, by showing how differences in the mothers' preventive health behaviour influence the health of the mother and her offspring. Using data from the SLDCP and SLDHS surveys I have looked at the ways women cope with their pregnancies and childbirth, and other infant and child health practices such as breastfeeding, weaning, supplementary feeding and immunization, in socio-economically and culturally different communities. My interest was to see whether the different levels of health status were due to the inaccessibility of health services or because of how people use the available services.

My analysis of SLDCP data showed that estate women were less likely than the urban middle-class or rural women to receive antenatal care during pregnancy; this was in contrast to the SLDHS findings which showed that only 5 per cent of the women received no care. As I was involved in the data collection of SLDCP I am confident that the SLDCP findings are correct: however, the SLDCP surveyed only one tea estate which may be atypical in its poor facilities.

Estate respondents said that it was hard to get the trained midwife as she lived far away, and that she would not come in time when women needed her. However, there were other reasons why they did not get the service of the trained midwife on the estate. The midwife was a Sinhalese and educated, with an official job. In this way the estate may have been atypical. A high proportion of midwives employed in the estates are Sinhalese but in general they are able to speak Tamil. Estate people were Indian Tamils of low caste, without even Sri Lankan citizenship, and felt separate from the majority population. With their limited education and exclusion by the Sinhalese population, and to a somewhat lesser extent even

by the Sri Lankan Tamils, they are not confident of their rights and are afraid of speaking against the estate officials for fear of losing their livelihood. Even if the midwife visits households, as she is instructed to do, she is not likely to meet the pregnant women as they are out six days a week picking tea and the midwife does not work on Sundays. The midwives also reported that urban poor women preferred to have their children at home, but with the assistance of a trained midwife. Most urban middle-class and rural women had hospital births.

Estate women depend for their main advice during pregnancy, childbirth, and the postnatal period on uneducated elderly women. These TBAs are not educated and have had little outside contact; therefore they still advise the women to do what they did in their youth. This has led to the estate women's distinctive practices in the natal and postnatal periods.

Many estate mothers followed the traditional birth attendant's instructions not to feed colostrum to their babies, thus denying them a vital source of immunity against many childhood infections; instead, the estate mothers fed babies with oils and glucose water. Glucose water is suitable for infants but if it is given using unsterilized utensils it can introduce infections to the newborn with serious consequences. Uneducated estate mothers who are not instructed in hygienic practices rely on the knowledge of the elderly women of their community. When infants die of neonatal infections the women never blame bad midwifery or feeding practices. The infant deaths are attributed to poverty, the weather, and the infant's or mother's weakness.

Women in urban poor areas and on the estate are late in introducing supplements to provide nutrients for the growing baby. The commencement of solids is also fairly late in urban poor areas and on the estate, and even when solids are introduced in these areas they are generally inadequate.

The estate people may be unable to afford them or foods may be scarce. Financially the urban poor people in the SLDCP were better-off than the rural people but only a small proportion of their children were given eggs and fruit. It is likely that they do not believe in supplementing children's diets and may wean directly onto the family diet.

The immunization of children against major childhood diseases was weaker among the urban poor, and on the estate, where most children were immunized very late.

An important reason for the poorer health status of the estate population compared to that of the low country is that the estate people are less educated and consequently unable to demand their rights to health services. As most were not Sri Lankan citizens at the time of the survey politicians were largely uninterested in their plight. The lack of sanitary facilities was mainly the result of estate people not demanding them, while the poor and crowded housing without proper ventilation added to the problem.

The urban poor covered by the SLDCP are mostly Moors, and their health is worse than that of the rest of the low-country poeple. This is partly due to less use of health services, for reasons outlined in Chapter 4, but poor prevention of disease is also a factor. The poor environmental conditions are clearly a factor. However, the slum population also lack awareness of preventive practices such as basic hygiene. An important factor is comparatively low education, especially of women; also the reluctance to allow Muslim women to interact with male health workers inevitably reduces the effectiveness of attempts to teach better preventive health practices.

Even without an improvement in housing conditions it is possible to improve the health of the estate and urban poor populations. Women

should be educated, preferably through formal schooling, and where this is lacking, by health workers with information on proper hygienic practices and child care. Females on the estate, in particular, should be advised on proper care in pregnancy, childbirth and postnatal care of mothers and infants.

Education, particularly that of females, may change cultural practices which are adverse to good health. Education especially influences such practices as dietary taboos during pregnancy, infant feeding practices and other health-care aspects of children. Educated mothers are more likely to use modern health care services, both curative and preventive: they are willing to accept and experiment with new ideas. Often, even the educated use curative rather than preventive services, yet the educated may also take other preventive actions such as using lavatories, providing safe drinking water (boiled water), hygienic food preparation, and heating leftover food.

In Chapter 4 I examined the impact of indigenous cultural concepts of health in terms of the ready acceptance of new forms of treatment. In this chapter I have been somewhat more restricted in terms of the impact of indigenous concepts of health, emphasizing the effect they have had in the estate, for example, on acceptance of behaviour conducive to good health. However, on the whole Sri Lankan indigenous concepts of health have favoured the acceptance of new behaviours concerning preventive health. Particularly important in this regard is the emphasis on cleanliness: a number of early writers, such as Percival (1803) and Knox (1981), have emphasized Sri Lankans' predilection for bathing. Similarly, the Ayurvedic advice on proper diet for a well balanced constitution, while different in some ways from modern concepts of a nutritious diet, is nevertheless easily adapted to it. On the other hand acceptance of the importance of colostrum for babies is a new concept and goes directly against traditional beliefs. It is hard to explain the acceptance of hospitals as the proper place for the

bearing of babies, apart from noting the point made in Chapter 4 that Ayurvedic medicine encouraged a practical approach to new health concepts.

I have not stressed the impact of indigenous health concepts on preventive health care because there is no clear conflict between indigenous and imported notions of disease prevention. This is unlike the situation in health treatment, where there is a clear contrast between Ayurvedic theories of illness and the germ theory of modern medicine.

One point that is important in terms of preventive health care is female autonomy. The considerable autonomy, particularly of Sinhalese women, is an important factor in their ability to attend hospitals for childbirth. The fact that women were not perceived to be the guardians of family reputation and traditions, as discussed in Chapter 4, probably made it more possible for them to be innovative, for example in antenatal care. Where these factors are less likely to be present, as among Muslim women, there has been much greater reluctance to accept new ideas in preventive health behaviour.

Chapter 6

Changing reproductive and child health care behaviour in Sri Lanka

6.1 Introduction

In Chapter 5 it was argued that mortality differences among the study communities reflected different health behaviours which were in part a result of ethnic differences and varying educational levels. On the basis that educational levels have improved over time and younger women have higher levels of education than older ones this chapter looks at differentials in health practices between the various age cohorts of women. Three age cohorts of women have been chosen: 15-34, 35-49, and 50 years and above. These age cohorts were chosen to ensure sufficient numbers in each. This chapter examines when changes in health behaviour began, what changes in people's lives have affected health and why this happened. The changes in health behaviour are analysed by the age of the children or their year of birth when data are available in that form (five-year-birth cohorts are used for the purpose), as this will indicate when the changes have taken place. The answers to questions about how and why health has improved over time were obtained from interviews with women over age 50. Educational and residential differences in health behaviour are also examined.

This chapter benefits from both qualitative and quantitative data collected in the Sri Lanka Demographic Change Project (SLDCP). Since the aim of this chapter is to examine the changes in health behaviour over time among Sri Lanka's different communities, it largely relies on the findings from the SLDCP. The use of published literature is limited because comparable studies of a longitudinal nature are not available.

The chapter deals with all ever-married women over 15 years of age and the children they had ever borne by the time of the survey. The data are coded as characteristics of births and therefore the analysis correctly represents the experience of children's births. But, if the analysis is regarded as the experience of mothers, then those of higher parity are over-represented. When, for convenience, I refer to the experience of women, I mean the experience of childbirths. Questions related to prenatal and natal practices and changes in health behaviour were asked in three survey areas: one rural area (Loluwagoda), one urban middle-class area (Welisara), and the estate.

6.2 Changes in birth practices

One of the major reasons for the decline in infant and maternal mortality in Sri Lanka has been the increase in the number of midwives employed to provide prenatal and natal services and the establishment of maternity homes for delivery (Meegama, 1967, 1969, 1986). The availability of health facilities has increased in all districts of Sri Lanka, particularly in the districts where the SLDCP survey was carried out (Gunatilleke, 1985), allowing women to seek many new services. The question of interest is the nature of the response to these new services by Sri Lankan women. In this section data on women's use of antenatal care, place of delivery, and the type of birth attendant, by women's age, level of education and place of residence are analysed.

6.2.1 Antenatal care

Younger women, on the whole, are more likely than older women to have received antenatal care (Table 6.1a). Of the total number of mothers in all areas, slightly more than 50 per cent of women in both urban middle-class (Welisara) and rural (Loluwagoda) areas had received professional antenatal care from a doctor, nurse or other kind of health worker at a

hospital or clinic, while nearly 30 per cent in each area had received no care. In contrast, only 36 per cent of estate women had received professional care and 63 per cent had received no care. In the urban middle-class and rural areas a substantial proportion of women who did not receive professional antenatal care, took vitamins, but on the estate only a negligible proportion did so. Taking vitamins during pregnancy may have little positive effect on the health of the mother and the foetus, and some argue that it may even have adverse effects, but it does indicate that the women are doing their best to look after themselves and the future child.

The higher proportion of younger cohorts who had received antenatal care is an indication that antenatal care is increasing. Of the women in the age group 15-34 years, 19 per cent in the urban middle-class and 22 per cent in rural areas had received no care, a figure which although still too high is less than half the level recorded by the 50+ group. However, in the estate population, although there was a 33 per cent decline in the proportion receiving no antenatal care from the age 50+ group to the 15-34 group, 54 per cent of the latter group of women still did not receive antenatal care. The differences in the use of antenatal care between the age cohorts in all three areas is statistically significant at the 0.001 level based on the chi-square test. Underreporting may have occurred among some older women because of memory lapse, but nevertheless, the change is very clear in all areas.

Table 6.1a Percentage distribution of births by mother's age group, type of antenatal care received and residence.

Type of care received and residence	Age cohorts of mothers 15-34	35-49	50 +	All ages
Urban middle-class (Welisara)				
No care	18.8	30.3	39.0	29.2
Professional	71.7	56.9	43.1	57.5
Vitamins	9.6	12.8	17.9	13.2
Total	100.0	100.0	100.0	100.0
N =	240	390	218	848
$\chi^2 = 38$ *d.f 4 significant at* $P < 0.001$				
Rural (Loluwagoda)				
No care	21.5	23.4	51.3	29.7
Professional	59.2	53.8	41.4	52.5
Vitamins	19.2	22.8	7.3	17.7
Total	100.0	100.0	100.0	100.0
N =	260	316	191	767
$\chi^2 = 63$ *d.f 4 significant at* $P < 0.001$				
Estate				
No care	52.4	64.0	78.4	63.2
Professional	45.9	36.0	21.6	36.4
Vitamins	1.7	- -	- -	0.5
Total	100.0	100.0	100.0	100.0
N =	172	353	102	627
$\chi^2 = 25$ *d.f 4 significant at* $P < 0.001$				

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.

Table 6.1b presents a similar analysis by level of education. It is striking for the lack of a consistent relationship between the type of antenatal care used and the women's level of education[1]. Nevertheless, given these inconsistencies, there is a general increase in the use of antenatal care by educated women. Interestingly, in urban middle-class areas, a higher proportion of the less educated women had received care from a doctor or a nurse during pregnancy than had the educated women, who were more likely to take vitamins to supplement their diet in

[1] The sample was too small to divide each age group by education and therefore Table 6.1b shows all women in each area cross-tabulated by their educational level

pregnancy. Overall, the effect of education on the type of antenatal care in the urban middle-class area was statistically significant at the 0.05 per cent level.

Table 6.1b Percentage distribution of births by mother's education, types of antenatal care and residence.

Type of care received and residence	Education in years		
	0 - 6	7 - 9	10 +
Urban middle-class (Welisara)			
No care	30.1	32.1	26.1
Professional	60.8	54.3	56.4
Vitamins	9.2	13.6	17.4
Total	100.0	100.0	100.0
N =	316	243	287
χ^2 = 11 d.f 4 significant at P < 0.05			

Rural (Loluwagoda)	Education in years			
	0 or 1-3	**4-6**	**7-9**	**10+**
No care	32.1	43.2	21.5	19.8
Professional	50.6	37.8	62.4	61.6
Vitamins	17.3	18.9	16.1	18.6
Total	100.0	100.0	100.0	100.0
N =	168	222	205	172
χ^2 = 41 d.f 6 significant at P < 0.001				

Estate	Education in years			
	None	**1-3**	**4-6**	**7+**
No care	72.3	46.2	68.3	50.0
Professional	27.7	53.8	31.7	50.0
Total	100.0	100.0	100.0	100.0
N =	203	131	235	58
χ^2 = 30.28 d.f 3 significant at P < 0.001				

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.

Among rural and estate women the association between the level of education and the type of antenatal care received is statistically stronger than the association shown for urban middle-class women which was also statistically significant. In the rural area, with the exception of the 4-6 years education group, the proportions of women having no antenatal care decreased with increasing education, and professional care increased. The vitamin intake among rural women differs little by education. On the

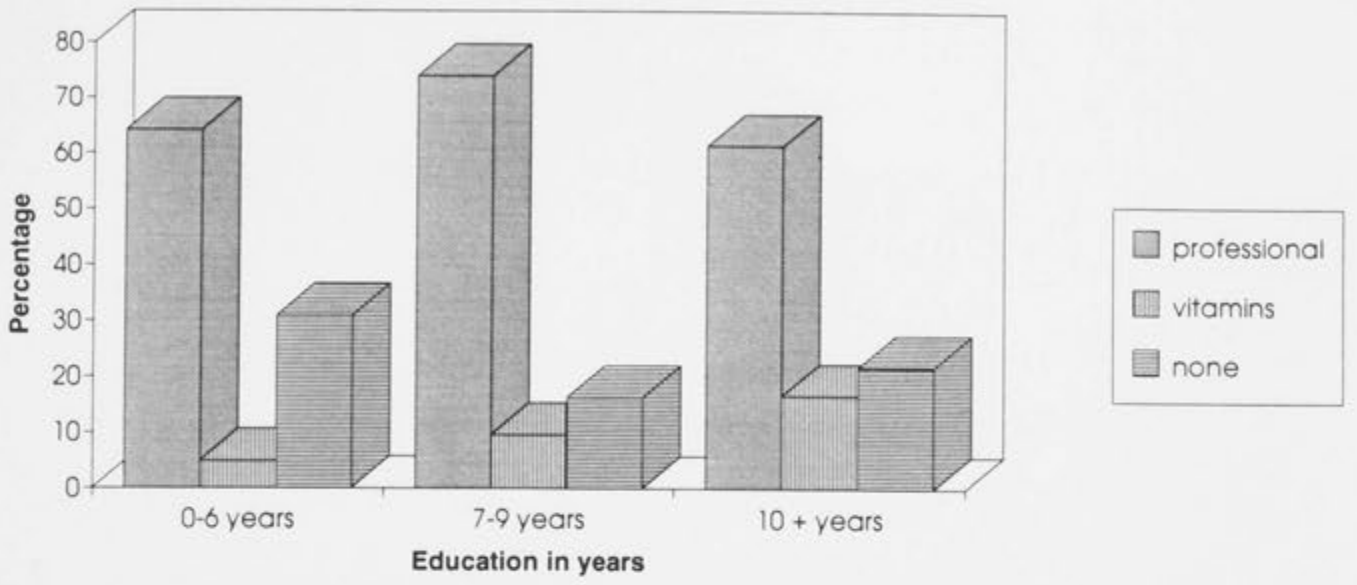
estate, nearly three-quarters of uneducated women had no care during pregnancy, while a somewhat higher proportion of women with some education had received professional antenatal care. However, even the most educated women in the estates were less likely than the less educated low-country women to have received antenatal care. Virtually no estate women had used vitamins as a form of antenatal care.

The impact of education on the use of antenatal services was pursued further by dividing all women into two age groups: women aged 15-39 and 40+ years. The results show that in all survey areas there is a statistically significant association between education of mother and use of antenatal care. Figures 6.1a to 6.3b (based on data in Appendix 6.1) exhibit the types of antenatal care used by younger and older cohorts of women analysed according to their education and residence. In the urban middle-class area, among the younger cohort of women, the association between education and the use of antenatal services is positive, but the use of such services is fairly even among all educational groups. Among the older urban middle-class women in the age cohort 40 and above, 34 per cent had received no antenatal care while 51 per cent had received care from the professionals. The use of antenatal care services in the urban middle-class area is somewhat more pronounced among the younger women than the older ones (see Figures 6.1a - 6.3b). This is not attributable to differential rural-urban migration as nearly all migration of this kind, some of which is occasioned by marriage, occurs before childbearing. A similar difference between the two age groups of women is also observed among rural women. In the estate education is strongly associated with the use of antenatal services among the younger women: those with at least four years of schooling are more likely to use professional antenatal services. The association is much weaker among the older estate women: the older educated estate women's antenatal behaviour is not very different from that of the less educated.

The older estate women, on the whole, were much less likely to have received professional antenatal care: only 32 per cent did so.

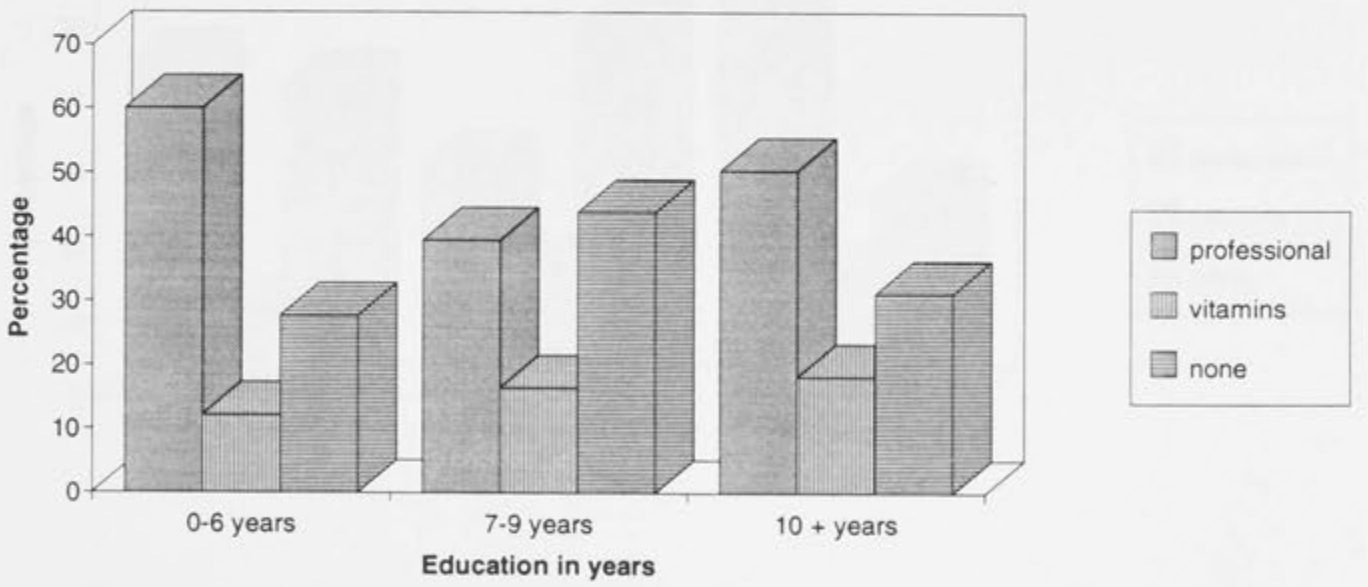
Overall, the level of education of women over 40 years of age does not appear to have changed the use of antenatal services, but education has an important influence among the younger mothers; the attainment of 7-9 years of education appears to affect a woman's use of professional care (see Figures 6.1a-c). So the spread of services over time, together with the educational opportunities for women, may be the principal explanation for the accelerated use of professional antenatal care by Sri Lankan women. Even less educated Sri Lankan women in the younger age group are more willing to use prenatal services, than are most educated women in the older age groups. Of the countries surveyed by the Demographic Health Survey (see Rutstein, Sommerfelt and Schoemaker, 1988; Stewart and Sommerfelt, 1991) Sri Lanka with its high rate of antenatal care among even the uneducated demonstrates the effectiveness of the grass-roots primary health-care system, which reached the villagers through health education and through family health midwives who visit households. The fact that most women are educated probably also influences the behaviour of even uneducated women, by legitimizing and demonstrating new behaviour.

Figure 6.1a: Percentage of mothers aged 15-39 years by type of antenatal care used and by education: Urban middle class



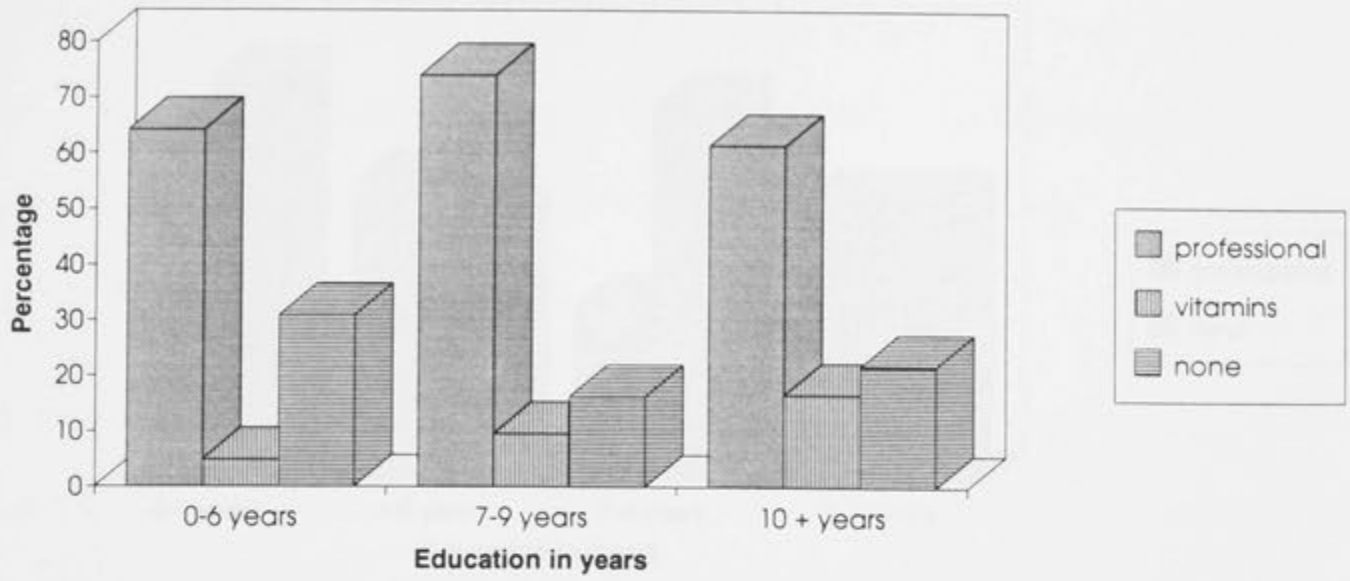
Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985.

Figure 6.1b: Percentage of mothers 40+ years by type of antenatal care used and by education: Urban middle class



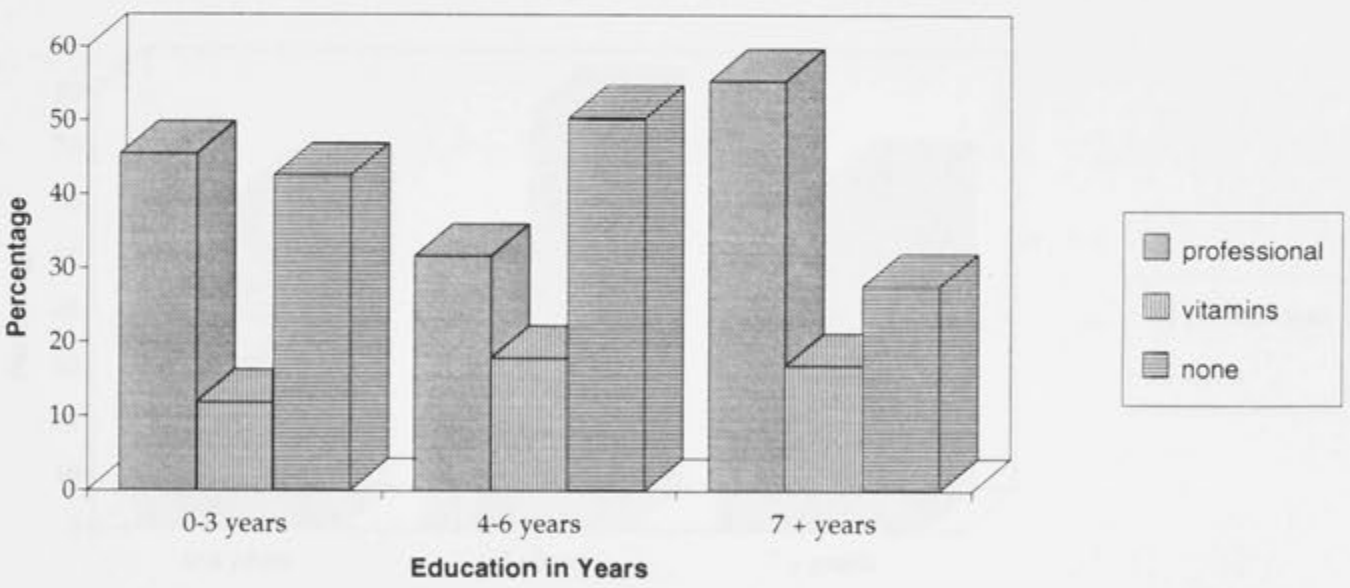
Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985.

Figure 6.2a: Percentage of mothers aged 15-39 years by type of antenatal care used and by education: Rural



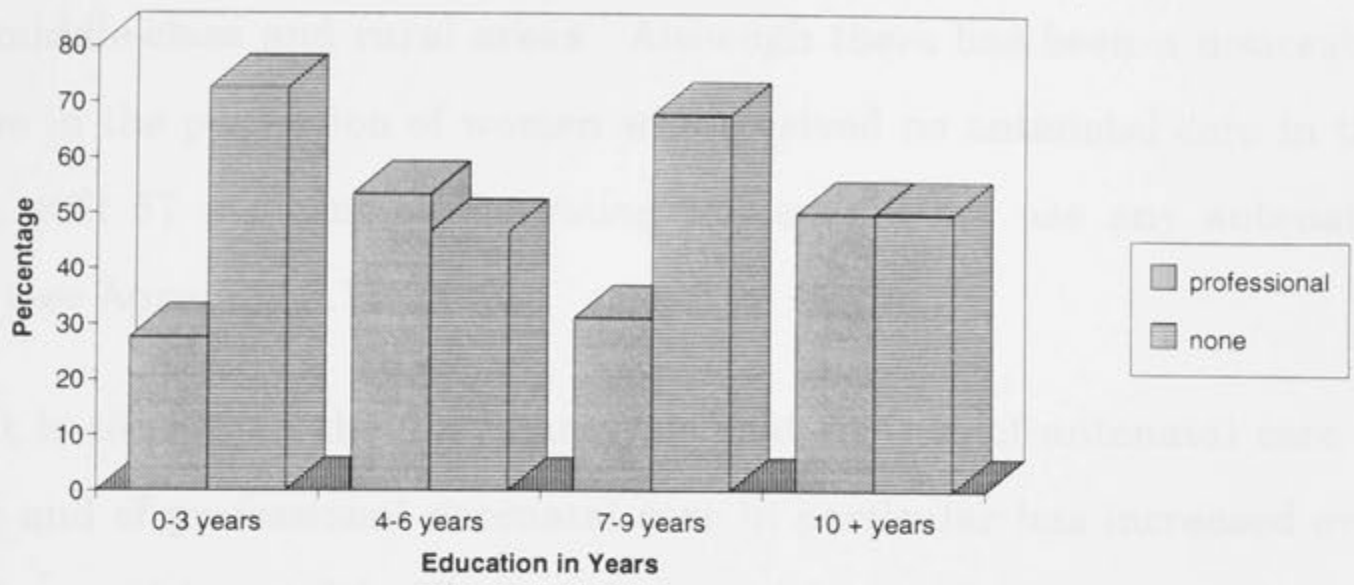
Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985.

Figure 6.2b: Percentage of mothers aged 40+ years by type of antenatal care used and by education: Rural



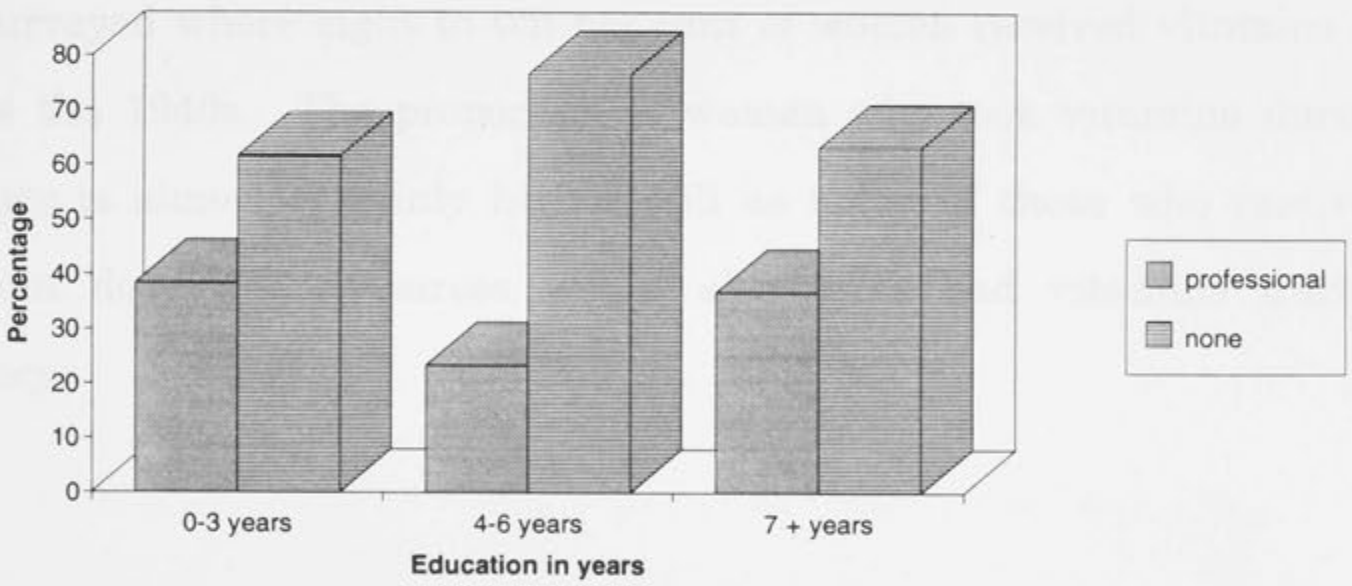
Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985.

Figure 6.3a: Percentage of mothers aged 15-39 years by type of antenatal care used and by education: Estate



Source: Primary analysis of Sri Lankan Demographic Change Project data, 1987.

Figure 6.3b: Percentage of mothers aged 40+ years by type of antenatal care used and by education: Estate



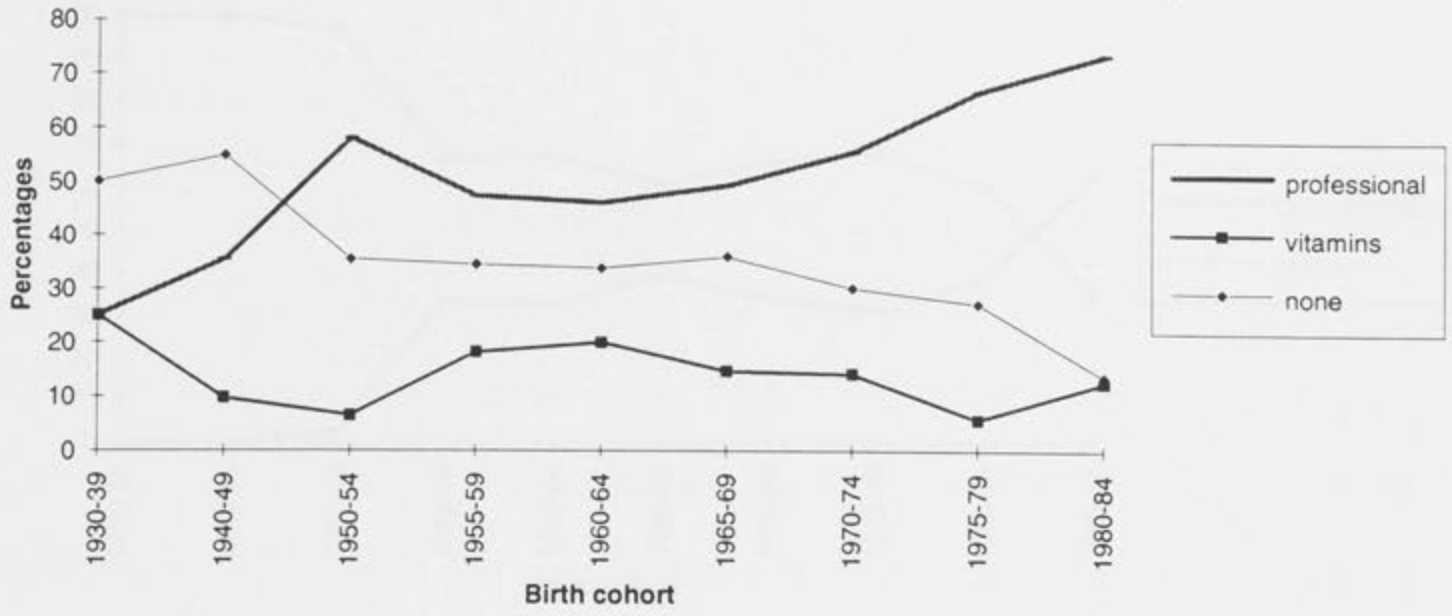
Source: Primary analysis of Sri Lankan Demographic Change Project data, 1987.

The health care system is weakest in the estate. The increase in the use of antenatal care services by younger women is more pronounced in urban middle-class and rural areas. Although there has been a noticeable decrease in the proportion of women who received no antenatal care in the estates, still 57 per cent of the young women did not use any antenatal service (see Appendix 6.1).

It is clear from the above analysis that the use of antenatal care in general and of professional antenatal care in particular has increased over time. It would be useful to know when this change began. Appendix 6.2 sets out the types of antenatal care by the child's year of birth and residence. These birth cohorts have been grouped into five-year birth cohorts with the exception of the first two groups which are combined into ten-year cohorts owing to small numbers.

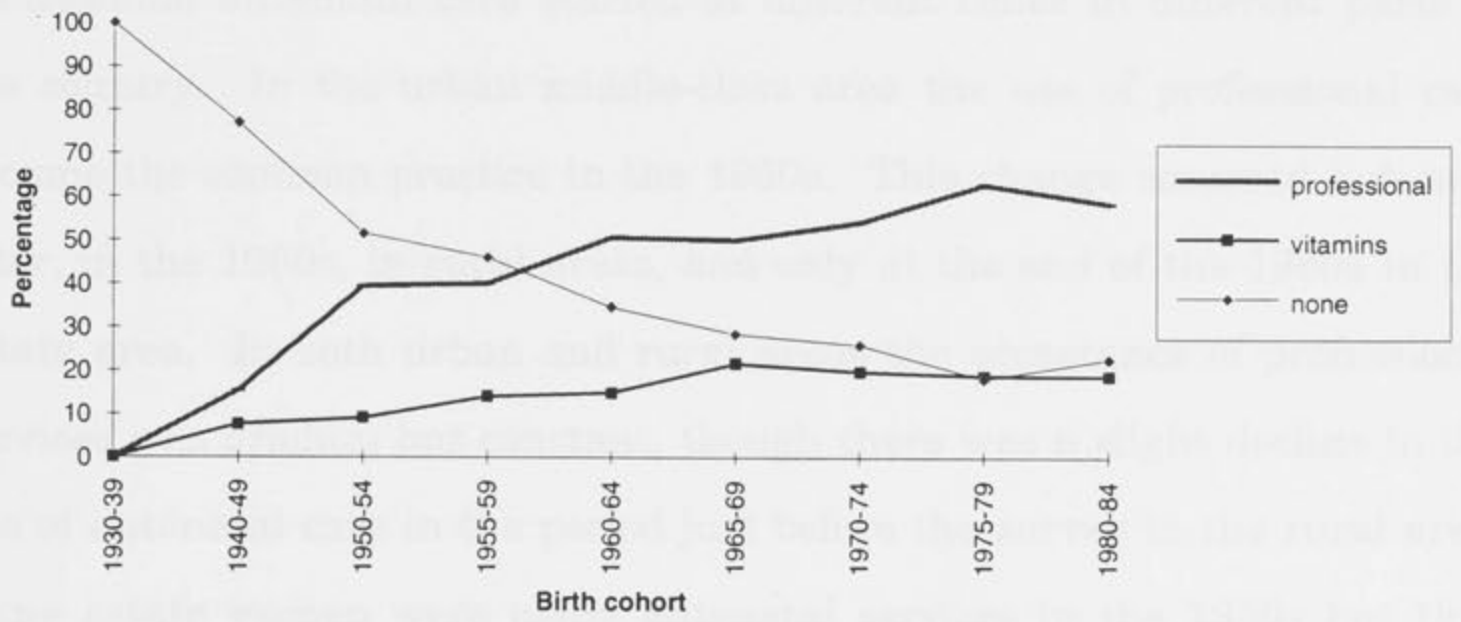
The survey findings indicate that the use of vitamins has been an integral part of antenatal care since the 1930s as can be seen in the Figures 6.4a - c and Appendix 6.2. This was particularly true in the urban and rural areas surveyed where eight to ten per cent of women received vitamins as early as the 1940s. The proportion of women who took vitamins during pregnancy is almost certainly higher still as many of those who received care from doctors and nurses would also have had vitamins during pregnancy.

Figure 6.4a: Percentages of total births by type of antenatal care used and birth cohort - Urban middle class



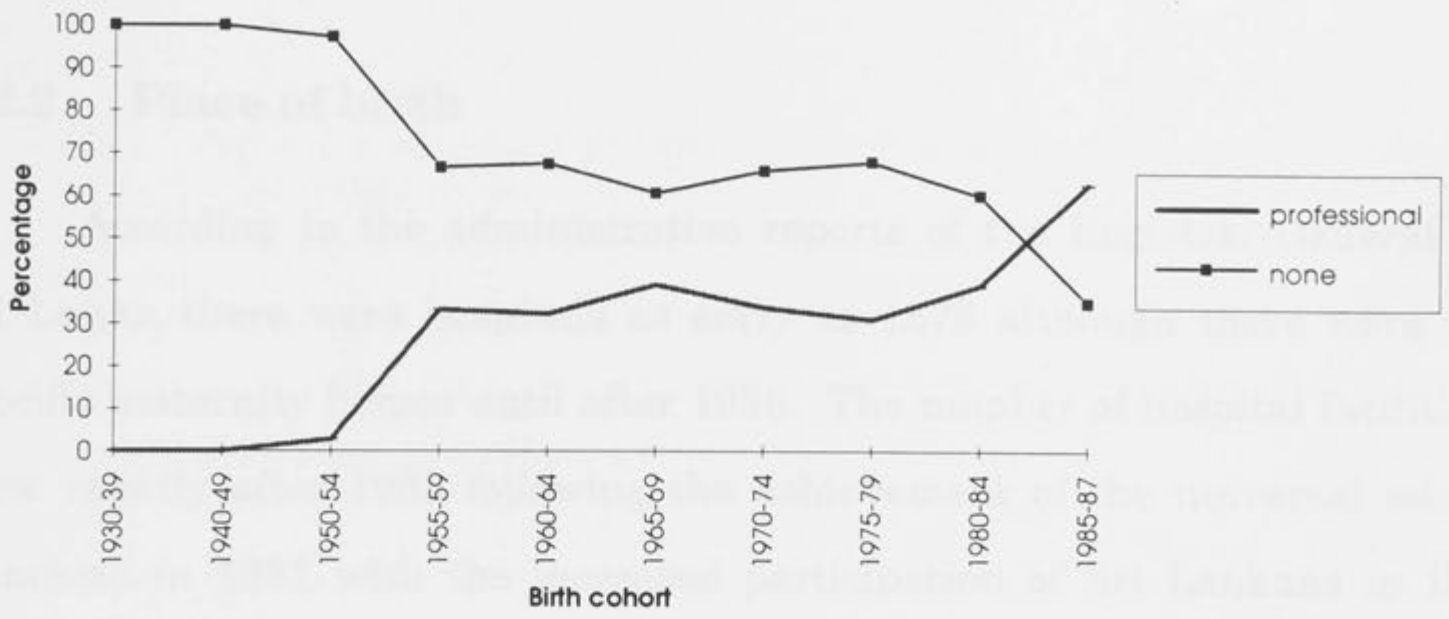
Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985.

Figure 6.4b: Percentages of total births by type of antenatal care used and birth cohort - Rural



Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985.

Figure 6.4c: Percentages of total births by type of antenatal care used and birth cohort - Estate



Source: Primary analysis of Sri Lankan Demographic Change Project data, 1987.

It is also clear from Figures 6.4a-c (and Appendix 6.2) that the use of professional antenatal care started at different times in different parts of the country. In the urban middle-class area the use of professional care became the common practice in the 1950s. This change occurred a decade later, in the 1960s, in rural areas, and only at the end of the 1980s in the estate area. In both urban and rural areas the acceptance of professional services was gradual but constant, though there was a slight decline in the use of antenatal care in the period just before the survey in the rural area. Some estate women were using antenatal services in the 1950s but they remained a minority even in the early 1980s, when only 39 per cent of the women received antenatal care from medical or paramedical personnel. By the late 1980s, however, the situation had almost reversed with the use of professional antenatal care having risen to 63 per cent and no care having declined to 35 per cent. This reported change in the last two-year period is almost certainly genuine as we can be fairly confident of the reporting of young mothers. If it is representative, it indicates that the estates are undergoing favourable changes in their health behaviour at present, as is

indeed reported by the government officials in that sector. This reflects increased government efforts to improve health in the estate sector.

6.2.2 Place of birth

According to the administrative reports of the Registrar-General of Sri Lanka there were hospitals as early as 1879 although there were no specific maternity homes until after 1935. The number of hospital facilities grew rapidly after 1935 following the achievement of the universal adult franchise in 1931 with the increased participation of Sri Lankans in the legislative and state councils (De Silva, 1956: Annexe 28; Peebles, 1982: 41; Gunatilleke, 1985: Table 1), and the impact of a malaria-induced mortality crisis in 1935 (Meegama, 1981: 157) in demonstrating the need for better health facilities. Tea estates, however, did not benefit equally from these improvements in health services as estate health affairs were handled, after independence, by a privately owned organization called the Planters' Association Estates Health Scheme (PAEHS). In 1974 all the estates were nationalized and the Ministry of Health became responsible for the estate population's health; following this with some delay, estate health conditions improved (Laing and Perera, 1986). The impact of this change is clear from Figure 6.4c. The need for changes in estate health services was highlighted by the high infant and child mortality on the estates during the famine of 1974. Tables 6.2a to 6.2c, using the SLDCP data, show the changes that occurred, by place of childbirth in different residential areas of the country.

As shown in Table 6.2a, in the two low-country areas, urban middle-class and rural, there is an inverse relationship between the mother's age and the proportion of births that took place in hospital: the younger the mother, the more likely she was to have had her children in a hospital. The proportion of women who went to hospitals for childbirth is higher for every age group in the rural area than the corresponding cohorts in the urban

area although maternal health facilities (hospitals and clinics) were first established and spread in urban centres.

Table 6.2a Per cent distribution of births by place of birth and mother's age and residence.

Residence and place of delivery	Age cohorts 15-34	35-49	50 +	All ages
Urban middle-class (Welisara)				
Home	3.3	10.3	29.8	13.3
Hospital	96.7	89.7	70.2	86.7
Total	100.0	100.0	100.0	100.0
N =	240	390	218	848
$\chi^2 = 75$ *d.f. 2 significant at* $P < 0.001$				
Rural (Loluwagoda)				
Home	2.7	3.2	18.8	6.9
Hospital	97.3	96.8	81.2	93.1
Total	100.0	100.0	100.0	100.0
N =	260	316	191	767
$\chi^2 = 56$ *d.f. 2 significant at* $P < 0.001$				
Estate				
Home	72.7	59.5	83.3	67.0
Hospital	27.3	40.5	16.7	33.0
Total	100.0	100.0	100.0	100.0
N =	172	353	102	627
$\chi^2 = 24$ *d.f. 2 significant at* $P < 0.001$				

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.

In the estate, a comparatively small proportion of mothers in every age cohort delivered in hospitals. Older women (50+) in the estate were much less likely to have gone to a hospital (only 17% did so) but 40 per cent of the women in the age group 35-49 had gone to hospitals for childbirth. The variation in the rate of change may reflect variations in the opening up of new health care facilities. Surprisingly, this increase in the use of hospitals has not continued with the youngest generation of estate women:

the proportion of women who went to hospital in the age cohort 15-34 (27%) is not very different from the proportion who went to hospital in the 50+ age cohort. It would be anticipated that younger women would go to hospital for childbirth. As pointed out in Chapter 5 the comparatively low usage of hospital facilities in the estates may reflect, in part, the cultural concept of pollution and the belief that hospitals are a source of pollution. Hindus believe that bodily wastes including blood are sources of ritual pollution (McGilvray, 1982). Given that younger estate women are more educated it is hypothesized that they may be less inclined to believe in traditional notions of pollution and more likely to use hospitals. To test this point, the effect of education on the place of childbirth was examined.

Generally in all survey aras there is a positive relationship between the education of the woman and whether or not she goes to a hospital for a delivery (Table 6.2b). However, a consistent increase in hospital use for childbirth by level of education is evident only among rural women. A higher proportion of women with four or more years of schooling in rural areas had hospital deliveries than of their urban and estate counterparts. Urban middle-class women show a small variation by the level of education in the use of hospital facilities for childbirth. Educated estate women, compared to their less educated counterparts, were much more likely to have gone to hospitals. However, the proportion of estate women who gave birth at home was still high in all educational groups.

Thus while education may be the greatest single influence on estate women's decision on whether to have children at home or in hospital, other factors such as availability, accessibility to health facilities and socio-economic and cultural factors have to be examined to explain what distinguishes the behaviour of estate women in this regard. There is a strong tradition of going to a woman's parental home for delivery; however, this custom was once also prevalent among the low-country population

(Obeyesekere, 1963), but has declined with the acceptance of hospitals. Even when women go to the parental house for childbirth the actual birth takes place in a hospital because most women do not feel comfortable revealing their bodies to those whom they know. This contrasts to the feeling of many Indian women, and also to the Sri Lankan Indian Tamil women on the estate who prefer home births.

Table 6.2b Percentage of mothers in each educational category by place of childbirth and residence.

Type of care and area	Education (years)			
		4 - 6	7 - 9	10 +
Urban middle-class (Welisara)				
Home	-	13.0	17.7	10.1
Hospital	-	87.0	82.3	89.9
Total	-	100.0	100.0	100.0
N =	-	316	243	287
$\chi^2 = 5$ *d.f. 2 significant at* $P < 0.05$				
Rural (Loluwagoda)	**0 or 1 - 3**	**4 - 6**	**7 - 9**	**10 +**
Home	13.1	9.0	3.4	2.3
Hospital	86.9	91.0	96.6	97.7
Total	100.0	100.0	100.0	100.0
N =	168	222	205	172
$\chi^2 = 22$ *d.f. 3 significant at* $P < 0.001$				
Estate	**None**	**1-3**	**4-6**	**7+**
Home	77.3	64.1	65.1	44.8
Hospital	22.7	35.9	34.9	55.2
Total	100.0	100.0	100.0	100.0
N =	203	131	235	58
$\chi^2 = 24$ *d.f. 3 significant at* $P < 0.001$				

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

Basu (1990: 280-81) explains the preference of north Indian women for home births as being due to their fear of going to hospital where they would have to spend a few days and nights in an unfamiliar, often hostile environment. Those women who have had limited contact with the outside world find it difficult to interact with the hospital staff. Similarly, Greer explains the fear of uneducated Indian villagers in going to a hospital for childbirth.

> ... removing the woman from her own territory to the unfamiliar environment of the hospital has a frightening and disorienting effect which is intensified by the further insistence on moving her from place to place once labor is well under way. Instead of being aided by familiar figures whom she trusts, who have nothing else to do for the time being but assist her, she is competing for the attention of professionals, who will not give her their undivided attention unless she earns it by turning into a medical emergency (Greer, 1984: 17).

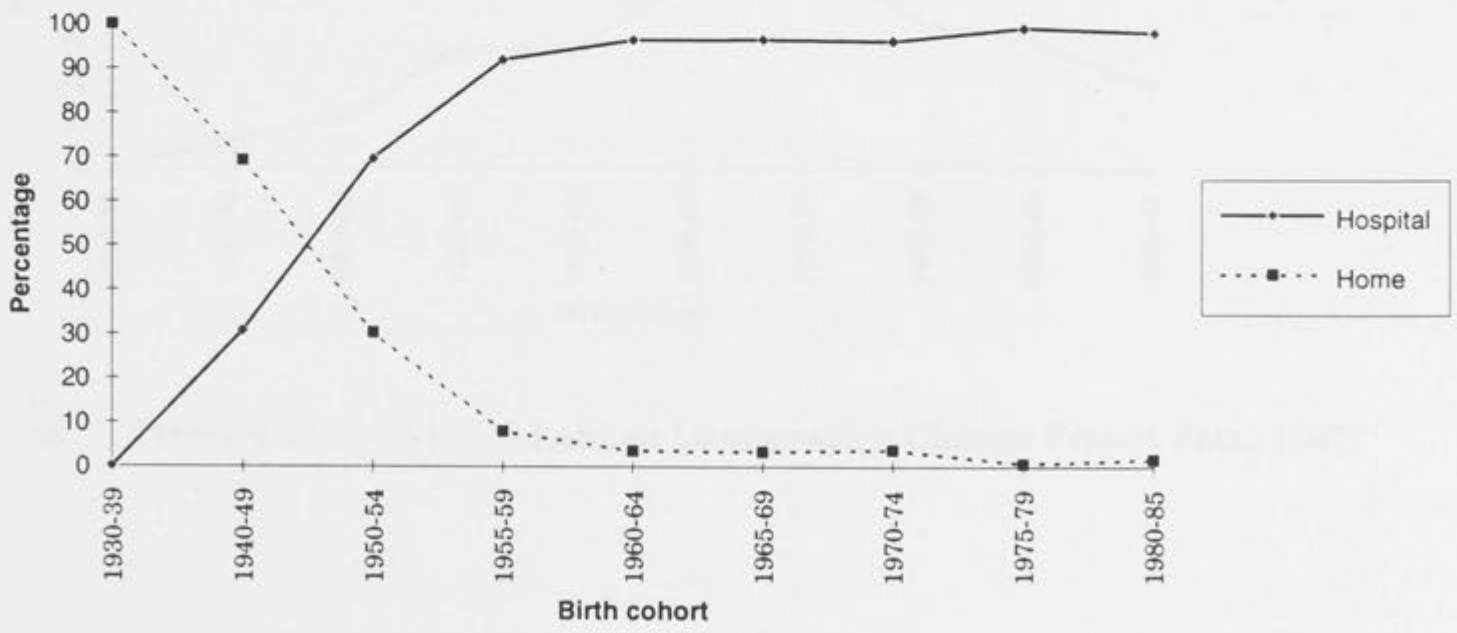
The decline in home births among Sinhalese women may be related to education. Lindenbaum (1990) found in Bangladesh that educated girls and women were much more modest with other women than uneducated ones were. This does not, however, explain why the educated estate women were reluctant to go to hospitals for childbirth.

One of the reasons for the reluctance of estate women to go to hospital was, as discussed in Chapter 5, the difficulty of attending hospital where hospitals were few and transport difficult. However, this is not a complete explanation given the general disinclination of the estate population to attend hospitals, even when ease of access was not such an issue and where transport was less of a problem than in the case of pregnant women. As discussed above, concepts of ritual pollution among Hindu women may discourage many from going to hospital. Furthermore many estate Tamils regard hospitals as essentially Sinhalese institutions staffed by Sinhalese. Finally a low level of female autonomy and a belief that women belong to the home, in spite of the fact that most estate women work and many are the main income earners, may make women feel they should give birth at

home. While these factors help to explain the low levels of estate women going to hospital for childbirth they do not explain the decline in hospital attendance among the younger cohorts.

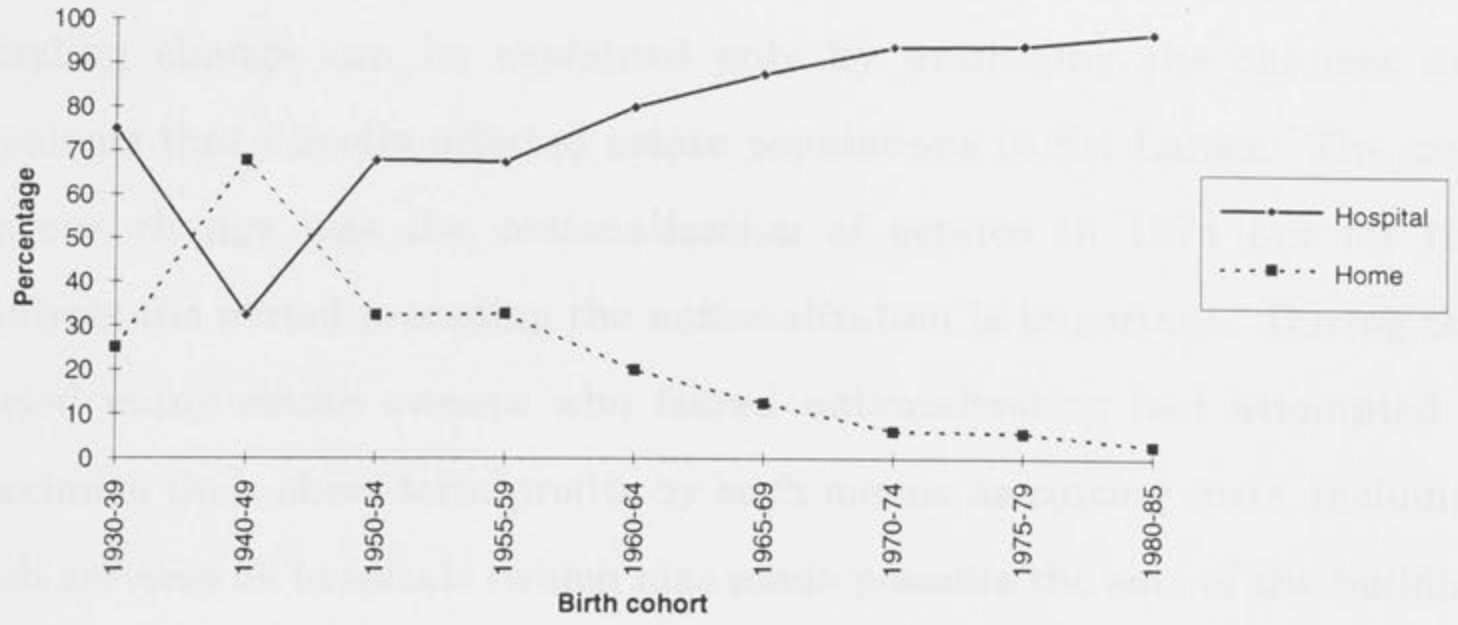
An analysis of the place of birth of children by year of birth provides valuable data on the timing of the change from home to hospital births. The 1930-39 cohort has not been considered in the interpretation of data as the number of births is very small. The major transition from home births to hospital births took place in urban middle-class and rural areas in the early 1950s, as is seen in Figures 6.5a-c, also Appendix 6.3. This transition was most rapid for the urban middle-class among whom hospital births were nearly universal by the late 1950s. This was not true among rural women until the 1970-74 birth cohorts. A slight decline in hospital births in both urban and rural areas for the birth cohort 1980-85 may have been due to the introduction of an emergency law under which people were not allowed to travel after dark following the communal riots of 1983.

Figure 6.5a: Percentages of children born at home and hospital by birth cohort - Urban middle class



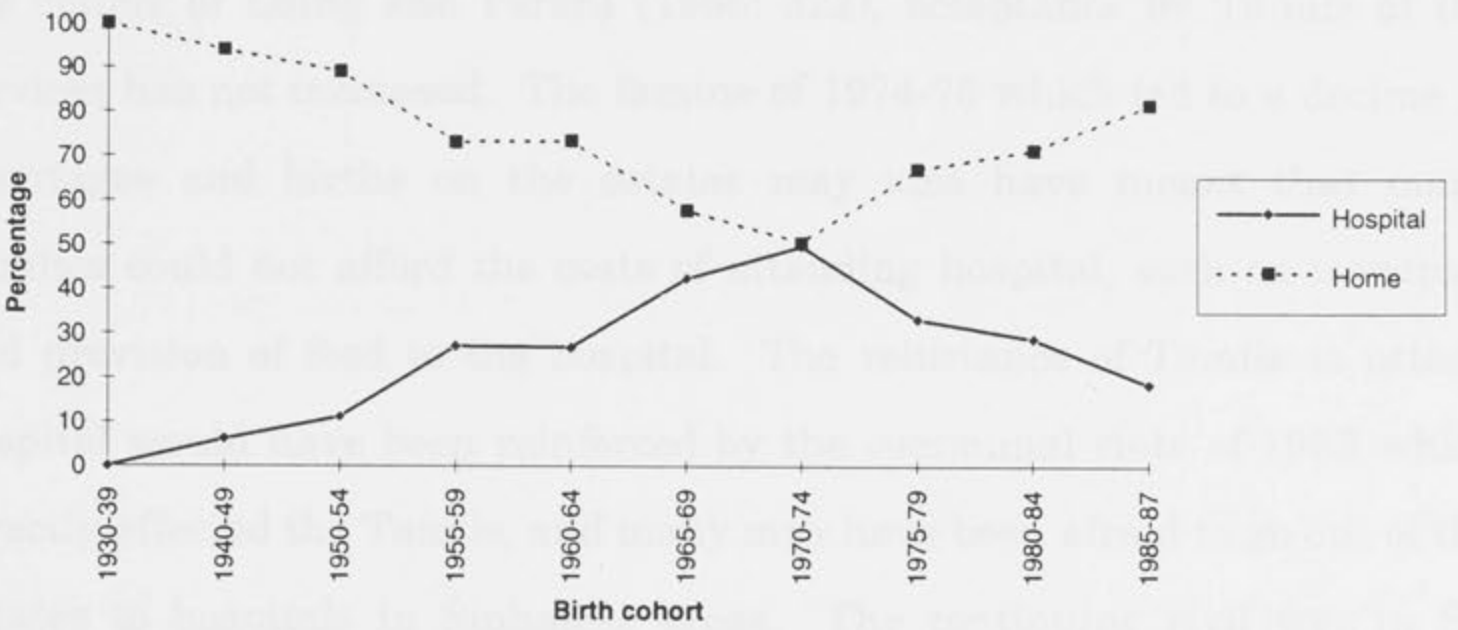
Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985.

Figure 6.5b: Percentages of children born at home and hospital by birth cohort - Rural



Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985.

Figure 6.5c: Percentages of children born at home and hospital by birth cohort - Estate



Source: Primary analysis of Sri Lankan Demographic Change Project data, 1987.

On the estate, children were increasingly born in hospitals until 1974, reaching a peak of 50 per cent but thereafter the trend reversed. This puzzling change can be explained only by examining the changes and problems that directly affected estate populations in Sri Lanka. The most obvious change was the nationalization of estates in 1974 but for this analysis the period preceding the nationalization is important. During this period many estate owners who feared nationalization had attempted to maximize their short-term profits by such means as cutting costs, including such services as hospitals (which also made possible the sale of the building materials). Elsewhere in Sri Lanka, hospitals were a government responsibility but on the estates, the owners were responsible. The closure of these hospitals increased the proportion of home births, especially given the problems of transport, and travelling out of the estate was difficult. Nationalization reversed this run-down of the medical system but did not lead to the abandoned hospitals being reopened. Furthermore, contrary to the claims of Laing and Perera (1986: 322), acceptance by Tamils of the services has not increased. The famine of 1974-75 which led to a decline in marriages and births on the estates may also have meant that many families could not afford the costs of attending hospital, such as transport and provision of food to the hospital. The reluctance of Tamils to attend hospital would have been reinforced by the communal riots of 1983 which directly affected the Tamils, and many may have been afraid to go out of the estates to hospitals in Sinhalese areas. The continuing civil war in Sri Lanka also puts them in an awkward position. Although the estate population is not part of the Sri Lankan Tamil Tigers separatist movement, since they are Tamils they are subject to suspicion from the Sinhalese.

6.2.3 Birth attendants

Trained midwives, replacing traditional birth attendants, were employed in Sri Lanka from the mid-1920s and as early as 1905 in Colombo

municipality (Peebles, 1982: 56-57; Meegama, 1986: 22). Table 1.8 in Chapter 1 shows that the number of midwives in Sri Lanka has rapidly increased, and that the estate sector in particular has also employed a large number of midwives. This section looks at the type of birth attendants employed by women at delivery in different areas.

The analysis of the SLDCP data on the extent to which women used the service of professionals, midwives, nurses or doctors at the time of delivery indicates that most women in low-country rural and urban middle-class areas received the service of professionals, while only 40 per cent of women in the estate did so (Table 6.3a).

Table 6.3a Births by type of birth attendants and woman's residence (%).

Birth attendants	Residence		
	Urban middle-class	Rural	Estate
TBA	0.9	1.0	42.4
Relative	2.0	0.9	15.0
Professional	93.8	97.4	39.7
Don't know	3.3	0.6	2.9
Total	100.0	100.0	100.0
N =	848	767	798

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.

The type of birth attendant present at delivery is directly influenced by the place of childbirth. When births take place outside the home, in a hospital, clinic or a maternity centre, they are usually attended by trained midwives, nurses or doctors. Given that nearly all urban and rural births occurred in hospitals, while most estate births took place at home, it is to be expected that the former were much more likely to be attended by trained midwives, nurses and doctors, and the latter by traditional midwives. Home births, nevertheless, can be assisted by trained midwives as there are such people available. It is, therefore, interesting to analyse only those births

that took place at home by the type of birth attendants employed. The result is presented in Table 6.3b.

Of those women who had children at home in rural and urban areas, the majority had medical or paramedical personnel present at delivery while the opposite was the case in the estate (Table 6.3b). In the estate, where most children were born at home, only 16 per cent of the births were attended by a trained health person, while 60 per cent were attended by traditional birth attendants (TBAs) and 22 per cent by a relative. This was despite there being a resident trained midwife on the estate. This indicates that it is not simply the lack of hospital facilities that prevented estate women from using modern medical assistance.

Table 6.3b Home births by type of birth attendants (%).

	Residence		
Type of birth attendant	Urban middle-class	Rural	Estate
TBA	7.1	15.1	60.2
Relative	14.2	13.2	21.5
Professional	75.2	66.0	15.6
Don't know	3.5	5.7	2.7
Total	100.0	100.0	100.0
N =	113	53	553

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.

Although some home births were attended by untrained persons in urban middle-class and rural areas, most involved trained birth attendants as early as the 1930s (see Table 6.3c) at a time when most children were born at home. The number of observations on which these results are based is small: during 1930-49, out of 34 births that took place in the urban middle-class area 88 per cent took place at home while in rural areas out of 31 births 77 per cent took place at home; but it is clear that even then most births were assisted by trained people. It is possible that there could be a selectivity bias here if those who did not receive professional treatment were more subject to mortality or migration, but this is probably not a major

factor. Only four of the home births in the urban area and six of the home births in the rural area were delivered by a TBA or a relative. On the estate the proportion of births that took place in hospital increased until 1970-74 (see Appendix 6.3) and similarly in the corresponding years the proportion of births attended by professionals went up. These two forms of birth assistance did not increase at the same rate, that is, the proportion of births attended by professionals rose more steeply than the proportion of births that took place in hospitals. This was because a certain number of home births were also assisted by the trained midwife. This too, unfortunately, changed in both situations from 1975 onwards: the proportion of births taking place at home increased and the proportion of home births attended by TBAs also increased (Table 6.3c).

Possible reasons for this changed behaviour have been discussed in sections 6.2.1 and 6.2.2. An additional factor may be the estate woman's dependent status within the family and the community. Estate males are generally very protective of their females. All the outside dealings including shopping and taking children to doctors were usually done by the husbands while the women stayed at home. Such dealings were mostly done on the weekends when women also had the day off, but it was still the husband who went out to the Sunday market even to choose clothing for the wife. This protectiveness may have become stronger in recent times because of communal riots and therefore many men are reluctant for the women to go to hospitals. The large proportion who are not educated in particular do not see any danger in having children at home.

The traditional midwife is available at any time, whereas many women are not able to communicate with the government midwife employed by the estate, who is Sinhalese. Even when the government midwife tried to persuade women to let her assist with births, she failed because she did not try to persuade the men, the influential decision-makers in the family.

Table 6.3c Birth cohorts of child by type of birth attendant (%).

Residence and type of birth attendant	Birth cohort 1930-49	1950-54	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-87
Urban middle-class									
Relative	8.8	6.5	3.6	3.5	1.5	1.2	0.7	0.6	
TBA	2.9	9.7	0.0	0.0	2.2	0.6	0.0	0.0	
Professional	88.2	83.8	96.4	96.5	96.3	98.2	99.3	99.4	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
N =	34	31	55	115	136	162	139	175	
Rural									
Relative	9.7	3.0	0.0	1.1	0.0	0.8	0.7	0.0	
TBA	12.9	0.0	0.0	0.0	1.7	1.5	0.0	0.0	
Professional	77.4	97.0	100.0	98.9	98.3	97.7	99.3	100.0	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
N =	31	33	50	87	116	131	143	176	
Estate									
Relative	19.2	25.0	12.7	11.3	11.3	13.0	16.0	13.8	18.5
TBA	71.2	58.3	38.1	39.4	28.9	28.7	42.9	46.6	55.6
Professional	9.6	16.7	49.2	49.3	59.8	58.3	41.2	39.7	25.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N =	52	36	63	71	97	115	119	174	54

Notes: a For urban middle-class and rural areas, 1980-84 birth cohort also includes births in 1985.

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.

The type of birth attendant employed in urban and rural areas does not differ by the women's level of education, as after 1950 nearly all births were in hospitals. However, on the estate there was a statistically significant ($P < 0.001$) difference between the educational groups in the type of birth attendants for those who gave birth at home (table not included). The education of the estate women was very low: only 9 per cent (N=58) of women had more than seven years of schooling. It was mostly this group of estate women who used the service of professionals at delivery. They tended to go to hospitals for delivery, but even when they had home births

they had a trained midwife or a doctor present to assist them. This educated minority on the estate were mostly members of the Sinhalese elite in the area: the majority of these women stay at home rather than work on the estates while their husbands are either engaged in estate management or working outside the estates.

6.3 Changes in child health care

This section examines various practices that affect infants' and children's health and the degree to which such practices have changed over time. For this purpose the immunization of children and the feeding practices (breastfeeding and supplementary feeding) of all children born to women over the 20 years preceding the survey are analysed. Data are available for all survey areas except one rural one, Bondupitiya.

6.3.1 Immunization

The immunization status of children aged 20 years or less was collected in the SLDCP survey. The information gathered included the types of immunization and ages at which immunization was given as an infant and in childhood. Chapter 5 showed that nearly all children under the age of five years in urban middle-class and rural areas were immunized except for measles.
against the major childhood diseases. I have further analysed immunization data in Table 6.4, relating also to older children, on how long immunization of children has been the standard practice. In urban middle-class and rural areas immunization has been almost complete for all individuals aged under 20 years and the urban poor areas also show an impressively high rate of immunization. Thus immunization has long been universal and stable in the low-country areas. The most impressive increase in the immunization of infants is exhibited in the estates where only 57 per cent of persons now between the ages of 15 and 20 years old were immunized as infants, that is in the years 1967-72. In contrast, 87 per

cent of children aged 0-5 at the time of the survey had been immunized, that is in the years 1982-1987 (see Table 6.4). However, even among young children immunization rates for estate children remain much lower than for low-country children.

Table 6.4 Children aged 20 years or less immunized[1] as infants, by current age and residence (%).

Immunization status and residence	Current age (years) 0-5	6-9	10-14	15-20	all ages
Urban middle-class					
Yes	98.9	100.0	99.1	96.4	98.1
No	1.1	0.0	0.9	3.6	1.9
N =	310	192	322	370	1194
Urban poor					
Yes	98.5	92.7	95.7	90.3	93.4
No	1.5	7.3	4.3	9.7	6.6
N =	391	274	292	301	1258
Rural					
Yes	96.2	100.0	98.0	94.4	96.7
No	3.8	0.0	2.0	5.6	3.3
N =	178	114	146	155	593
Estate					
Yes	86.8	63.7	67.9	56.9	69.3
No	13.2	36.3	32.1	43.1	30.7
N =	182	119	120	108	529

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

Note: 1 Refers to the use of any type of immunization.

Table 6.5 shows data on the types of immunization given to children by age groups in the various residential areas. In all areas, the immunization of children has increased and the greatest rise in all types of immunization has occurred in the estate. In the low-country urban middle-class area, urban poor areas and rural areas, nearly all children had been given BCG against tuberculosis. The BCG injection is given within 24 hours of birth, and the high proportion of children who have been immunized is probably due to most of the births having taken place in hospitals. In urban poor

areas the proportion of children who were given DPT and polio immunization is quite low. In the estate one-quarter of children in the youngest age group still have not had BCG, presumably reflecting the high proportion of home births. It is possible to immunize babies some time after birth at maternal and child health clinics where women are supposed to take infants for regular check-ups. There may still be a large number of infants who are not taken to baby clinics for weighing and other examinations. Even those infants who were taken to clinics at first, were not taken continuously as is indicated by the very low rates of immunization against DPT and polio. The tea estate has an immunization program that holds clinics at the estate dispensary once a month. The estate doctor claimed that there were pick-up points for mothers and children at each division. However, if the estate women attended the clinics they would lose their wages — if they are absent from work they will not get paid. They said they would have been happy to attend such clinics if they were given paid leave.

It also appears from the SLDCP data that Sri Lankans do not accept the measles injection. As mentioned in Chapter 5, the reason may be partly that people regard measles as the punishment of the Goddess Pattini and mortals cannot meddle with divine affairs. It might be expected that rural people would be the most likely to hold such beliefs, but it is the rural respondents who were likely to have had their children immunized against measles (albeit only 14.5 per cent of those with children under 5 had done so), which may show that traditional beliefs are somewhat weakly held today. However, the measles injection was only introduced in 1982, three years before the main SLDCP survey. The later age at which children are given measles injections may also influence immunization rates.

Table 6.5 Children immunized in each age group by type of immunization, current age and residence (%).

Type of immunization and residence	Age group of children (years) 0-5	6-9	10-14	15-20	all ages
Urban middle-class					
BCG	98.9	100.0	99.1	96.9	98.3
DPT & polio	89.7	91.0	92.5	90.0	87.3
Measles	5.7	1.3	0.0	0.0	1.3
other	3.4	11.5	15.1	16.0	12.7
N =	310	192	322	370	1194
Urban poor					
BCG	95.4	92.7	93.5	88.2	91.7
DPT & polio	76.9	71.6	76.1	59.7	69.3
Measles	1.5	1.8	1.1	0.0	1.0
other	1.5	2.8	8.7	10.4	6.6
N =	391	274	292	301	1258
Rural					
BCG	96.2	100.0	98.0	91.0	95.4
DPT & polio	88.5	98.0	88.0	78.7	86.7
Measles	13.5	6.1	0.0	1.1	4.6
other	0.0	2.0	4.0	6.7	3.8
N =	178	114	146	155	593
Estate					
BCG	77.5	72.3	60.8	38.9	64.7
DPT & polio	57.1	56.3	30.0	15.7	42.3
Measles	6.0	0.8	0.0	0.0	2.3
other	0.5	0.8	0.8	1.9	1.0
N =	182	119	120	108	529

Notes: Other category includes immunization against typhoid and cholera.

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

6.3.2 Changes in infant feeding practices

The SLDCP survey found that infant feeding practices in Sri Lanka differed by socio-economic groups: urban middle-class women breastfed their children for a short duration and introduced supplements early; rural women, who also supplement children early, breastfed longer; the urban poor and estate women introduced supplements later than urban middle-class or rural women but breastfed for a shorter period than rural women (see Section 5.5 and following subsections in Chapter 5). The subsequent sections examine whether the contemporary pattern of infant feeding prevailed in the past as well.

6.3.2.1 Breastfeeding

The belief that colostrum is unclean and not suitable for infants seems to have lessened greatly in recent years, particularly in the tea estate. The comparison here is restricted to two survey areas, an urban middle-class area of Welisara and the estate, as the question on the commencement of breastfeeding was not asked in the other survey areas.

Forty four per cent or less than half the children born to young estate mothers (women aged 15-34) were fed colostrum. Nevertheless this is a striking change compared to the 7.8 per cent of children of women over 50 years, that is from the situation 20-25 years ago (see Table 6.6)[2]. Among the older estate Tamil women, breastfeeding commonly started on the third day or later, whereas the youngest cohort of estate women mostly breastfed on the first or second day after birth. The middle-class area (Welisara) shows a similar increase in early feeding but at a higher level: 86 per cent of the children born to women in the 15-34 age cohort were fed on the first day compared to 82 and 75 per cent of the children born to women aged 35-49

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[2] Seventy five per cent of the children born to women of the same age cohort in the urban middle-class area were given colostrum.

and 50 years and over, respectively. However, it is surprising that in Welisara 13 per cent of children born to mothers of the age cohort 15-34 and 17 per cent and 23 per cent of children born to mothers in the age cohorts 35-49 and 50 and over respectively did not feed the babies on the same day of birth as most births took place in hospitals. It is possible that the late breastfeeding in the urban middle-class area may have been due to caesarean births or the mother being given anaesthesia during a normal delivery; but this explanation seems unlikely. It is more likely that the mothers simply refused to breastfeed as they believed colostrum to be bad for the baby. However, despite the variations in the initiation in the breastfeeding by area and cohorts of mothers, what is most striking is the near-universality of breastfeeding.

Table 6.6 Births by initiation of breastfeeding, current age of mother and residence[a] (%).

Initiation of breastfeeding	Age group of mother 15 - 34	35 - 49	50 +	All ages
Urban middle-class (Welisara)				
Day of birth	86.2	81.9	75.2	81.4
2 days later	7.1	14.0	13.8	12.0
3 or more days later	5.9	3.4	9.6	5.7
Never breastfed	0.8	0.8	1.4	0.9
Total	100.0	100.0	100.0	100.0
N =	239	386	218	843
Estate				
Day of birth	44.2	32.0	7.8	31.4
2 days later	37.2	32.9	28.4	33.3
3 or more days later	18.0	33.7	62.7	33.5
Never breastfed	0.6	1.4	1.0	1.8
Total	100.0	100.0	100.0	100.0
N =	172	353	102	627

Notes: a This breastfeeding question was asked only in one middle-class area of the low-country - Welisara.

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

In the estates it was quite clear that most women believed colostrum was dirty and could cause stomach-aches in infants. As most estate women give birth at home with the assistance solely of traditional midwives, such misconceptions may be easily encouraged. Given the very low level of childbirth taking place in hospital, and its recent decline, it is interesting to note that on the estates women are increasingly breastfeeding babies on the day of birth. This may indicate that the advice given by the resident government midwife during their pregnancies is being taken seriously.

Table 6.7 shows what was given to those infants who were not breastfed for the first three days. In the low-country middle-class area, boiled water, sugar or glucose water and powdered milk were the major types of liquids given before breastfeeding was commenced. As mothers increasingly recognize the advantages of breastmilk, the proportion who said they fed nothing in the middle-class area has increased. This has been matched by a fall in the proportion of mothers feeding sugar or glucose or boiled water. In the estate, the children of women who were over 50 years of age at the time of the survey, had mostly been given sugar or glucose water solution followed by herbal preparations. This has changed little among the younger cohorts of women. Unlike the women in urban areas where the practice of giving sugar or glucose solutions is diminishing, estate women still follow what the older generations have done, perhaps because they give birth at home and follow the instructions of the traditional midwife or relatives who share their culture and their own experiences with them. Even the younger generation of women in the estate are unwilling to question their elders, and they accept what they are told.

Table 6.7 Types of food given to babies[a] before breastfeeding began, by mother's age and residence[b] (%).

Residence and types of food	Age group of mothers 15 - 34	35 - 49	50 +	All ages
Urban middle-class N = 133				
Boiled water	33.3	39.1	40.5	38.3
Herbal mixtures	0.0	0.0	4.8	1.5
Powdered milk	22.2	7.8	0.0	8.3
Sugar/glucose water	33.3	46.9	54.8	46.6
Nothing	11.1	6.3	0.0	5.3
Total	100.0	100.0	100.0	100.0
Estate N = 406				
Boiled water	0.0	3.0	1.2	2.0
Herbal mixtures	5.3	5.7	7.3	5.9
Powdered milk	3.2	0.0	0.0	0.7
Sugar/glucose water	79.8	85.2	89.0	84.7
Herbs and glucose	10.6	3.5	0.0	4.4
Castor oil	1.1	2.6	2.4	2.2
Total	100.0	100.0	100.0	100.0

Note: a Refers to babies who were breastfed two or more days after birth.
b Question was asked only in one middle-class low-country area - Welisara.

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

6.3.2.2 Supplementary feeding

It was shown in Chapter 5 that urban middle-class and rural women tended to supplement breastfeeding earlier than women in the urban poor areas and estate. In urban middle-class areas, it has long been the practice to supplement children early and it has started even earlier among the youngest cohort of children, as can be seen in Table 6.8. The shift, however, is only significant at the 0.05 per cent level. In rural areas supplementation was late in the past but the fall has been greater ($P < 0.001$). A pairwise analysis of the means employing a multiple range test indicated that the most significant change occurred between the younger cohort of children (0-5 years) and the 15-20 age cohort of children. In the rural area the younger cohort (0-5 years) had breastmilk supplements introduced exactly one

month earlier than the 15-20 age cohort in rural area. Significant change in the ages of supplementary feeding has not occurred in urban poor and estate areas.

Table 6.8 Mean age (in months) when breastfeeding first supplemented, by current age of child and residence.

Residence	Age group (years)				
	0 - 5	6 - 14	15 - 20	All ages	N
Urban middle-class [a]	2.4	2.9	2.9	2.8	1,027
Urban poor (NS)	4.1	4.4	4.9	4.5	1,129
Rural [b]	2.8	3.5	3.8	3.4	1,537
Estate (NS)	3.6	3.7	4.0	4.0	498

Note: Never/not yet supplemented categories were excluded when calculating means.
a Significant at $P < 0.05$
b Significant at $P < 0.001$
NS Not significant

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.

Urban poor and estate children at all ages were supplemented much later than rural or urban middle-class children. There has been a general shift from late supplementation for older cohorts of children to early supplementation in young age cohorts in both urban poor areas and the estate (the shift, however, is not statistically significant), but they continue to supplement later than in the other two areas. Poverty in the urban poor areas and on the estate may have led women to delay giving supplementary food to their children. Many women were not well educated, and also did not see the need for early supplementation as breastfeeding was thought to provide enough nutrition for a young child. The late ages of supplementary feeding in the poor areas and estate compared to the middle-class and rural areas may also reflect cultural difference due to the ethnic differences in these areas.

The ages at which solid food was introduced show the same pattern as found in the giving of liquid supplements. Although, in Sri Lanka, the officially recommended age for introducing solids is 4-6 months, and WHO

recommends six months, the actual ages at which children were given solids vary by the place of residence in Sri Lanka (Table 6.9). The major reason for this variation, as discussed above, is the ethnic difference: the Sinhalese gave solid supplements at the recommended age while the Moors in the urban poor areas and the Indian Tamils in the estate introduced solids at a later age.

Table 6.9 Mean age (in months) when solids were introduced, by current age of child and residence.

Residence	Age group (years)				
	0 - 5	6 - 14	15 - 20	All ages	N
Urban middle-class [a]	5.3	5.9	6.0	5.8	736
Urban poor (NS)	7.7	8.4	8.5	8.2	717
Rural (NS)	6.2	6.2	6.8	6.3	423
Estate (NS)	8.3	8.1	8.3	8.2	395

Note: Those who were not yet given solids were excluded when calculating means.
a Significant at $P < 0.001$ NS Not significant

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.

The mean age at which solids were given to children seems to have declined from older children to younger ones in all the low-country areas, but the decline was not statistically significant in the urban middle-class areas. The estate area, in contrast, shows no sign of change. One reason for the decline may be education, a factor examined in more detail in Section 6.3.2.4.

A critical area in terms of child feeding practices is the length of breastfeeding, as it has health implications for both the mother and the child. Mothers benefit from longer breastfeeding as it delays the end of amenorrhoea, prolonging protection against early conception. Interestingly, the majority of the women in the SLDCP Survey denied any knowledge of the contraceptive effect of longer breastfeeding and even when they knew of it most did not breastfeed longer with the intention of delaying a conception.

Of all SLDCP women whom we asked the question, only 42 per cent said they knew that long breastfeeding delayed conception. However, among the urban middle-class women 56.5 per cent were aware of the breastfeeding effect on pregnancy, but only 25 per cent of those women breastfed their children with the intention of delaying another pregnancy. Another 30 per cent said that prolonged breastfeeding had only some importance while the rest, 39 per cent, responded that their knowledge of the contraceptive effect of longer breastfeeding played no role in their decision to breastfeed children longer. Among the tea estate women only 29 per cent had any knowledge of the effect of longer breastfeeding on delaying a conception.

Children benefit from breastfeeding, particularly in the first 4-6 months, as breastmilk provides various nutrients required for the baby and immunity against many infectious diseases. Furthermore, it is the safest form of nutrition as it is free from contamination whereas bottle feeding, even when providing the necessary nutrients, can easily be contaminated through lack of proper refrigeration or cold storage and unhygienic methods of preparation.

The major finding of the SLDCP concerning breastfeeding is that there has been a statistically significant reduction in breastfeeding in all areas (Table 6.10). This reduction has accelerated in recent times for the youngest cohort. For all cohorts, the urban middle-class areas had the shortest period of breastfeeding followed by the urban poor areas. The rural areas and the estates had the longest periods.

Table 6.10 Mean duration (in months) of breastfeeding of children who were not being breastfed at the time of survey by current age of child and residence.

Residence	Age group (years)				
	0 - 5	6 - 14	15 - 20	All ages	N
Urban middle-class [a]	11.6	17.1	15.8	15.5	1,086
Urban poor [a]	14.5	18.6	18.3	17.4	1,154
Rural [a]	17.7	22.1	22.1	21.0	1,451
Estate [b]	16.5	21.2	22.0	20.1	455

Note: Never breastfed/not yet weaned categories were excluded when calculating means.
a Significant at $P < 0.001$ b Significant at $P < 0.05$

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

6.3.2.3 Patterns of infant feeding and sex of child

The SLDCP data were analysed to see whether there had been any sex differentials in infant feeding patterns by sex of the child, in terms of length of breastfeeding and supplementary feeding, among the children aged 15-20 and younger groups (aged 0-5 and 6-14). There was no statistically significant difference in any of the study areas. This finding is in striking contrast to the situation in many Asian societies such as Bangladesh and India (Bhatia, 1989; Das Gupta, 1990: 450-451) where male babies were favourably treated in comparison to female infants.

Langford and Storey (1993: 266) found in Sri Lanka little difference in mortality by sex for infants under one year, but a substantial difference before 1971 in children aged one to four years, with higher death rates among girls. This is consistent with earlier weaning for girls. This implies that Sri Lanka formerly experienced a pattern of favoured treatment for boys such as is still found elsewhere in South Asia. A number of scholars have indeed argued that the decline in discriminatory treatment against girls is one of the main explanations for Sri Lanka's dramatic decline in mortality (for example, Nadarajah, 1983; Langford, 1984; Caldwell, 1986).

One explanation is that the fertility decline in Sri Lanka has been accompanied by an increase in the economic value of girls. Although people still prefer to have sons to secure the lineage, this no longer felt to be essential. The education of girls is becoming as important as the education of boys, and girls increasingly work outside the home. Although it is still believed to be the son's responsibility to look after the parents in old age, it is usually the girls that parents turn to. The social changes including education of females that have altered their position in society and in particular within the family have made it difficult for mother-in-law and daughter-in-law to live in harmony under one roof. Instead of the traditionally submissive daughter-in-law, today there is a comparatively independent woman. Therefore, rather than turn to their son and daughter-in-law for help, parents are now more likely to expect their daughters' help in old age. Therefore, parents have good reasons nowadays not to discriminate against their female children.

6.3.2.4 Mother's education and infant feeding practices

The level of education of the mother has a statistically significant effect on the average age of children when they were given supplementary feeding or the duration of breastfeeding only in urban middle-class and rural areas. In urban poor areas and estates, women's education did not change mothers' behaviour regarding infant feeding (table not included). In the urban middle-class, women with ten or more years of education, on average, first supplemented their infants at the age of two months while women with 0-3 years of education supplemented at the age of four months: the ANOVA test of the means found the variation significant at $P < 0.001$.

Solids were introduced by the more educated mothers at five months and the less educated at seven months ($P < 0.001$). The strongest difference is shown in the length of breastfeeding: the more educated breastfed for only

12.1 months while the less educated on average breastfed for 24.8 months ($P < 0.001$). The education of the mother was associated with the age at which children were given liquid supplements and the length of breastfeeding in rural areas. The educated mothers (those with 10+ years of education) gave liquid supplements to their children at the age of three months while those with 0-3 years of education started supplementing at the age of four months ($P < 0.001$). The age at which solid foods were given did not show any statistically significant difference by mother's education. Children born to educated mothers were breastfed, on average, for only 19 months whereas the children whose mothers were less educated were breastfed for 23 months ($P < 0.001$).

6.4 Changes in health behaviour: the experience of the old

It is evident from various mortality studies of Sri Lanka as well as from the SLDCP data that the health of children has improved over time in Sri Lanka. To find out what changes in women's lives have contributed to the improved health of children today the SLDCP asked women over 50 years about the changes they had experienced from the time when they were young. Most of the older women in all three areas surveyed agreed that young women look after their children's health differently from former times (Table 6.11).

This feeling that behaviour had changed was particularly strong among urban and rural women, 94-96 per cent, compared to 83 per cent in the estate. Women were then asked how young mothers' child health behaviour had changed up to the present and why such changes had occurred. These questions were open-ended, allowing women to express their views, and the answers were later coded: the coded responses are used to show the general feeling of the respondents, while their discussions are used to elaborate the statistics.

Table 6.11 Do young women look after their children's health differently from former times? (%)

	Urban middle-class (Welisara)	Rural (Loluwagoda)	Estate
Yes	93.7	96.1	83.1
No	6.3	2.0	13.6
No response	- -	2.0	3.4
Total	100.0	100.0	100.0
N =	79	102	59

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.

6.4.1 How has young mothers' child health care behaviour changed? Views of older women

Table 6.12 gives the percentage distribution of the respondents' views on how young mothers' child care has changed. The major positive change that emanates from the replies is that a larger proportion of women, irrespective of their residence, were of the opinion that mothers' care has improved today. This was particularly the view of the majority of rural women. The second major change rural women cited was the prompt treatment sought by mothers when children were sick. The availability of good food and an increase in health facilities were the two important reasons other than mother's care given by the urban middle-class women, while the second most important reason for estate women was the improvement in health facilities.

While positive attitudes to changes in child care predominate among the opinions of older women, 18-19 per cent of both urban and rural women and 22 per cent of estate women disapprove of younger women's child care practices. The major focus in this disapproval was on mothers leaving their children in others' care while they went out to work. Surprisingly this concern only very roughly correlates with women's actual working patterns. It might be expected that concern would be much higher in the estate where 75 per cent of women worked than in the urban middle-class area where only 27 per cent of the women did so. This is especially the case as most of

the working middle-class women were employed in the formal sector and had the means to employ servants while the estate women had to work full time as tea pluckers leaving children at creches or at home with their fathers or siblings. In fact this view is found only slightly more in the estate. This may reflect a moral disapproval among the older women in the middle-class areas regarding their daughters and daughters-in-law working whereas in the estate it is recognized as a necessity. Estate women have always had to work. Nevertheless the need for women to work, and the lack of good alternative care, may explain the much lower proportion in the estate citing improved mothers' care in the estates especially in comparison to the rural area.

Table 6.12 Older women's views on young mothers' child care (first response only) (%).

Differences	Residence		
	Urban middle-class (Welisara)	Rural (Loluwagoda)	Estate
Positive			
Mothers' care has improved	40.5	59.8	35.6
Health facilities increased	10.1	2.9	18.6
Immunization	5.1	2.9	5.1
Cleanliness	2.5	2.0	5.1
Good food available	12.7	3.9	1.7
Prompt treatment by mothers	5.1	8.8	3.4
Subtotal	76.0	80.3	69.5
Negative			
Do not look after children well	6.3	11.8	3.4
Women go out to work leaving children with others	11.4	6.9	18.6
Subtotal	17.7	18.7	22.0
Do not know	6.3	1.0	8.5
Total	100.0	100.0	100.0
N =	79	102	59

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.

The employment situation of the women in the estates is not a recent development as the primary purpose of bringing Indian Tamils to Sri Lanka was to employ them in the estate sector and women have long been

regarded as the best tea pickers. The difference appears to be that nowadays most women leave children at creches provided by the estate management under the care of unknown persons whereas older women left their infants with the older siblings. Estate women today have fewer children than their mothers did: older women usually had a child old enough to look after the younger ones. Furthermore, education rates, while still among the lowest in Sri Lanka, are much higher than formerly so the older children are more likely to be at school and unavailable for baby care.

In rural areas those women who felt that younger women did not look after children well said that they did not give them the right food and did not breastfeed sufficiently long. Young women's work outside the home was not an important issue in rural areas perhaps because, when they worked, they did not have to go far from home: 31 per cent of the women worked in the same rural area, mostly in a local coir factory. There were no creches in any of the low-country areas surveyed and rural people could not afford servants. The child care was provided by an older relative or in some instances by older siblings.

The women were asked what were the causes of the changed child health care behaviour of young women. Their answers are given in Table 6.13. In urban middle-class and rural areas the most common answer was that parents' improved knowledge of health matters had contributed to the changes in young mothers' health care. Another reason related to parental knowledge, particularly in rural areas, is parental interest in child health. Higher standards of medical facilities were also seen as an important factor. In the estate, although mothers' improved knowledge of child health matters is seen as important, more emphasis is laid upon the structural changes such as improved medical standards, the provision of more child care, the decline in breastfeeding and the fact of the mother's work.

Table 6.13 Older women's reasons for changes in child health care (first response only) (%).

Reasons	Residence		
	Urban middle-class (Welisara)	Rural (Loluwagoda)	Estate
People's knowledge on health matters has improved	24.1	25.5	15.3
High medical standard	16.5	16.7	20.3
Parents are interested in child health	12.7	23.5	8.5
Mothers are working	16.5	7.8	10.2
Children today need more care	2.5	1.0	13.6
Breastfeeding declined	0.0	2.0	10.2
Economic and social problems	1.3	2.9	1.7
Families are smaller today	3.8	3.9	-
Anxiety about social ills	5.1	0.0	-
Modern society	3.8	3.0	-
Immunization available	-	-	5.1
Enough food available	-	-	3.4
Do not know	6.3	2.0	3.4
No response	7.6	11.8	8.5
Total	100.0	100.0	100.0
N =	79	102	59

Note: Of the low-country areas this question was asked in Welisara and Loluwagoda only.

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.

It is evident from the negative responses, such as the older women's views on the decline in breastfeeding, mothers' working status and childrens' dependence on parents, that the older women do not believe there has been much change in the health conditions of estate children. Mother's work in urban middle-class areas too is seen as a cause for concern about child health care because in the past the most respected job for women was teaching as that allowed them to spend a substantial time with their children. In today's society, women engage in a variety of jobs, often spending long hours, even a good part of the night, outside the home.

It is, nevertheless, the general agreement of the women that younger women today give a great deal of attention to the needs of children. A few case studies illustrate the mechanism of change in health behaviour.

Explaining the impact of education, Podi Menika said:

> Now most mothers look after their children well because they are educated and know health matters well. In our time women couldn't look after their children well because they had many of them. Now women have only two or three children and things have changed this way: education has improved, health programs are available and many medicines have been developed.

Similarly Pinchi Nona said:

> Nowadays mothers are educated and they have a good knowledge about health and looking after the children. They learn about good hygiene and they get advice from health clinics and books. In the past women didn't know much and knew only what their parents said.

Another woman, Agnes, attributed the behavioural changes to increased women's autonomy:

> Nowadays mothers look after the health of their children well because they can understand about health matters. They feel that they can control their own lives and that of their children. It has been helped by the new health facilities.

The development and availability of health services, the young people's willingness to accept them and their prompt taking of needed action also had been important. Agdahamy said

> When I was young there were not many health facilities. So we looked after the health of our children by treating with home medicines. We did not care about doctor's treatment, but nowadays parents like to take hospital medicine straightaway. In the old days when a child got a normal illness parents did not care about it. But now even if it is minor or not they take immediate treatment.

Kawamma's view was that a number of factors, namely economic well-being, social change, female autonomy, female labour force

participation, new medical facilities and law-and-order, have combined to change young women's child-health behaviour today:

> Compared with the past children are now better clothed and well fed. Once only large [older] children were taken to hospital when sick; they tried to help infants with home remedies and went no further. Now even infants are rushed to hospital. Now if we give only home medicines and their infant dies, there will be an inquiry. The police will arrive and rush even very young children to hospital. Secondly, they have largely forgotten how to make the home medicines and there are no longer Ayurvedic doctors to teach them. Thirdly, women's wages are so important that they don't want the risk of looking after a kid with a chronic condition; they want a quick cure. Furthermore, an increasing number of women will take their kids to the doctor without waiting for their husbands.

The influence of the media and the health workers in giving health messages has also contributed to the changes in health behaviour, according to Babynona:

> Midwives give advice to parents on how to keep the children healthy and clean. Doctors hold discussions on TV or radio about health of the people once a week. PHI [Public Health Inspector] of the area keeps attention on the area's hygiene. They [Government] give facilities to build toilets for houses. There are methods of family planning to have good healthy families.

The older women felt it was the improved awareness of mothers of the need to look after children and their knowledge on health matters in general that brought about the changes in today's health care. They explained the changes in mothers' behaviour as being a direct result of the improved levels of female education and the health messages from the media.

Education has made people knowledgeable about health matters, and capable of understanding the need to care for their children. It has taught them to have more faith in modern medicine, take instructions from the doctors and follow them correctly and when children are sick, seek prompt treatment. The ability to get prompt treatment has been facilitated by the greater availability of services too. In the old days, parents did not worry so much every time children became ill. It was only when they felt the

illnesses to be serious that they took children to a hospital; otherwise they just gave them some home medicine or took them to a local doctor. In particular, young mothers today take more notice of what the doctors say than what the elders say, whereas in the past women did what their older relatives (mothers or in-laws) said. Today young couples share the responsibility of child care while in the past the fathers' primary responsibility was to provide for the family.

In the past Sri Lanka was much more an agricultural society where women were required to have many children and to help on the family farm. They left younger children in the care of their older siblings whereas today women have only two or three children, and this allows them to pay more attention to their children's health needs.

Negative responses from the older women regarding the health behaviour of younger women particularly in the middle-class area, tended to be on the mother's work outside the home and about leaving children in boarding schools. For the older ones this meant neglect on the part of parents or creating a distance between the two generations showing that young parents did not love their children enough, but the younger ones felt that it was done for their children's eventual benefit. Older women in all areas thought that young mothers today did not breastfeed babies long enough and instead gave commercial milk powders. They felt correctly that bottlefed babies were more susceptible to illnesses, thus requiring more care.

6.4.2 Decline in infant deaths

Women in all three survey areas were in general agreement that infant mortality in their areas had declined (Table 6.14) and estate women, in particular, believed so. They may have genuinely experienced a large reduction in child losses.

Table 6.14 Whether young children are less likely to die (%).

	Residence		
Response	Urban middle-class	Rural	Estate
Yes	74.7	78.4	81.4
No	25.3	21.6	18.6
Total	100.0	100.0	100.0
N =	79	102	59

Note: Of the low-country areas this question was asked in Welisara and Loluwagoda only.

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.

Women were also asked to explain why infant mortality has decreased in their areas and their responses are shown in Table 6.15. The single most important reason given by women in all three areas for the decline in infant mortality is the availability of better health facilities. Interestingly, mothers' caring behaviour was not credited with making a significant contribution to the reduction in infant mortality in urban middle-class and rural areas, perhaps because the respondents felt that causes related to infant deaths cannot be controlled by mothers' action, so that changes in young mothers' health behaviour do not have much bearing on reducing infant mortality. They saw the changes in terms of the availability of antibiotics, immunization for preventing infants' diseases and the accessibility to hospitals for childbirth.

In contrast, older estate women attached considerable importance to mothers' health-seeking behaviour, immunization and mothers' knowledge and care of children. In the estate 22 per cent of the women reported that young mothers were quick to seek treatment for their children and this may mean that young females today have acquired much more autonomy in decision making within the family than they had in the past. In the past it was when people were seriously ill, often only when they were very close to dying, that they were taken to hospital. A substantial proportion of women in all three areas said they did not know the reasons for reduced infant

mortality; the same group of women said that infant mortality had not decreased (see Tables 6.14 and 6.15).

Table 6.15 Old women's reasons for infant mortality decline (first response only) (%).

Reasons	Residence		
	Urban middle-class	Rural	Estate
Better health facilities	57.0	48.0	40.7
Mothers' readiness to seek treatment	3.8	6.9	22.0
Mothers' knowledge of child care improved	3.8	1.0	3.4
Hospital births	1.3	3.9	1.7
Less home medicine	-	5.9	-
High standard of hygiene	-	1.0	1.7
Mothers' better care	-	2.0	1.7
Fewer cases of convulsions/ diarrhoea/worms	3.8	4.9	-
Health education	1.3	-	-
Good food	1.3	1.0	-
Immunization	-	2.0	6.8
Small families	-	1.0	1.7
Do not know	25.3	21.6	13.6
No response	2.5	1.0	6.8
Total	100.0	100.0	100.0
N =	79	102	59

Note: Of the low-country areas this question was asked in Welisara and Loluwagoda only.

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

6.4.3 Causes of good hygiene in the research area

The sanitary revolution in Europe has often been credited with being a major influence in mortality reduction and increased longevity. Similarly, this has been an important factor in mortality decline in Sri Lanka. Therefore, the older women, who were most likely to have experienced any

changes, were asked how their villages had become more hygienic since they were young. Their responses are shown in Tables 6.16a and 6.16b.

Table 6.16a Ways in which village life has become more hygienic as perceived by older women (first response) (%).

Perceived changes	Residence		
	Urban middle-class	Rural	Estate
Modern medical technology	38.0	42.2	30.5
Midwife/PHI's home visits	19.0	6.9	11.9
Sanitation facilities	10.1	29.4	6.8
Personal cleanliness	3.8	2.9	10.2
Insect control	3.8	4.9	-
Health education	1.3	2.9	5.1
Clean environment	3.8	-	-
Immunization	3.8	-	-
Public health campaigns	-	7.8	1.7
Clean water	-	1.0	13.6
Not more hygienic	11.4	1.0	10.2
No response	5.1	1.0	10.2
Total	100.0	100.0	100.0
N =	79	102	59

Note: Of the low-country areas this question was asked in Welisara and Loluwagoda only.

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.

Responses to this question seem rather ambiguous as many respondents, in their first responses, cited the improved medical technologies as the cause of improved hygiene in all areas. However, there is disparity in the importance attached to the other important changes by area. For example improved sanitation facilities, especially the provision of toilets, rank second in importance in the rural area but ranked third and fifth in importance in the urban middle-class and estate respectively. Government public health campaigns in rural areas have provided families with the necessary equipment to build toilets; in recent times this was done

by voluntary organizations such as the Sarvodaya Movement[3]. This organization provides funds for toilets and tube wells to be built in villages. When the government provided assistance to build toilets, a public health inspector (PHI) visited the house regularly to check the cleanliness of the family. Urban middle-class and estate women regarded the visits by the family health midwife or PHI to be the second and third important factor, respectively, in changing village hygiene. It was also regarded as an important factor by the rural women.

In contrast to the other areas, estate women perceived the provision of clean water and personal cleanliness as important factors that had changed the hygienic conditions in the estate. Most households in the middle-class and rural areas where this question was asked (Welisara and Loluwagoda) continue to depend on household wells for water, which by and large is healthy. In contrast the estates are dependent for healthy water on that provided by the estate management.

In the second response (see Table 6.16.b), improved medical technology is still of importance, particularly in the urban middle-class area. Urban middle-class respondents also said that home visits by PHI or midwife, improved sanitation facilities, and personal cleanliness were the important factors that made village life hygienic. In the rural area immunization, midwife's and PHI's visits, personal cleanliness and insect control were important factors. Insect control may essentially refer to the control of malaria after 1945, although the study area was not much affected by the malaria epidemics early this century. Nevertheless, DDT spraying was carried out in non-malarial areas as well to control the breeding of mosquitos.

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3 A Sri Lankan non-government organization that assists village development projects. It provides a wide range of assistance apart from sanitary facilities, such as training village youth for self-employment in sewing, embroidery, batik and other handcrafts.

Table 6.16b Older women's second response on how village life has become more hygienic (%).

Perceived changes	Residence		
	Urban middle-class	Rural	Estate
Medical facilities	26.3	9.8	13.5
Midwife/PHI's home visits	24.6	12.7	24.3
Sanitation facilities	17.5	12.7	10.8
Personal cleanliness	10.5	5.9	21.6
Immunization	7.0	13.7	-
Public health campaign	5.3	3.9	-
Health education	5.3	3.9	2.7
Clean water	3.5	6.9	8.1
Clean environment	-	1.0	-
Insect control	-	11.8	-
Fewer sick children	-	2.0	2.7
Not more hygienic	-	2.0	16.2
No response	-	13.7	-
Total	100.0	100.0	100.0
N =	79	102	37[a]

Note: Of the low-country areas this question was asked in Welisara and Loluwagoda only.

a In the estate only 37 respondents provided a second response.

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.

Similarly estate women attributed much of the improvement in hygienic conditions to house calls of midwives and Public Health Inspectors; personal cleanliness that could in part be a result of midwife's and PHI's supervision or of increasing levels of education; availability of medical facilities; and improved sanitation.

Overall, the majority of the older women believed that changes had taken place in the areas where they lived, the consensus being that medical technology change was the most important change. However, the ordering of the other important changes varies by place of residence.

6.5 Summary and conclusion

This chapter has used both quantitative and qualitative data to look at changes in Sri Lankans' health behaviour over the last fifty years. The areas of health behaviour covered in the chapter included changes in the use of maternal and child health services, and in infant feeding practices. The views of older women were examined on the changes in young mothers' behaviour concerning their child care; how and why infant mortality has decreased; and the changes, and the factors underlying them, in hygiene in the research areas.

Favourable changes in mothers' health behaviour were evident in all areas. The use of antenatal services has increased in all research areas, and the institutional delivery of babies has become the norm in the low-country areas; however, in the estate most births still took place at home. The effect of mother's education on the place of birth was statistically significant in all areas, but the proportion of home births was much higher in the estate. Owing to various social and political problems that affected the estate population, as well as their cultural background, the estate women have been reluctant to use hospital facilities for childbirth, and, consequently, rely on traditional birth attendants whereas in the low-country areas almost every home birth is assisted by the government-trained midwife. The ethnic pressures felt by the Tamil women make it hard for them to relate to the wider community, particularly to the country's majority Sinhalese.

The use of child health services, especially immunization services, is very low in the estate, and universality has not yet been achieved in other areas. Because of the large proportion of hospital births in low-country areas, BCG is given to nearly all babies there; in the estates, where babies are mostly born at home, BCG coverage is low. Two reasons were given from a Sri Lankan community health project for the large dropout rate between the second and third DPT and polio vaccines: first, mothers are

reluctant to take children for immunization if the children have even the slightest illness such as a common cold; secondly little importance is given to immunization by mothers through lack of health knowledge (University of Colombo, 1983: 21-22). We observed that children in the urban poor areas and in the estate often suffered from colds due to the nature of the environment; therefore, their immunization may have been delayed, and once it has been delayed for a long time, many women fear that health staff will reprimand them for the delay if they take the children to the clinic. The same reason may explain why measles vaccination is not given to children in the estates, although this does not explain the reluctance of urban and rural mothers to use that facility for their children. The recent introduction of the measles vaccine in 1982 is one factor as it means there is little tradition in using it. The later age that the measles inoculation is given may also affect inoculation rates. The low rate of measles inoculation may also be due to the Sinhalese and Tamil belief that measles is an illness which results from divine punishment and should not be treated. Nevertheless, this does not explain why many Muslims do not have their children vaccinated against measles.

With regard to infant feeding, the feeding of colostrum has increased in all areas, but 56 per cent of the youngest estate children were still not given colostrum in infancy, compared to 14 per cent in Welisara. Early supplementary feeding has long been the norm in urban middle-class and rural areas, and has become even earlier. In the estate and in the urban poor areas, supplements were introduced at later ages, probably because of greater poverty and possibly because of cultural differences. The duration of breastfeeding has declined in all areas; rural women breastfeed the longest followed by the estate women and then the urban poor women. Urban middle-class women breastfeed for the shortest duration with the most educated weaning soonest. In the urban poor areas and the estate, the age

of supplementary feeding or length of breastfeeding did not differ by level of education of the mother, primarily because all the women had very little education. Cultural differences between these women seem to have been more important than education, most estate women being Tamil and the urban poor women being mostly Muslims whereas the population in other areas was Sinhalese.

Overall, maternal and child health behaviour has changed in favour of better health. The changes in health in Sri Lanka were attributed by the older women to more health facilities, and the better knowledge acquired by young women through education, the media and their increased autonomy through education and social changes. The young women's interest in child care and their initiative in decision making were the major factors that contributed to their behavioural changes. The older women believed that infant deaths have declined because of increased health facilities and the young parents' willingness to use them and to follow the doctors' instructions carefully, which was also a direct result of high levels of female literacy. The increased sanitary facilities in the villages through government and non-governmental organizations' contributions have improved the health status of the community as a whole.

Although health behaviour overall has changed favourably, some aspects of it have remained conservative, particularly in the areas of maternal and child health. For example, antenatal care and immunization are often seen as a kind of therapy given to people who have health problems. For those who are healthy no special attention is required and indeed modern medicine may be regarded as having the potential to create unnecessary health problems. In a study of a remote area of Sri Lanka, Noten (1985) found that women, particularly those who had had children, felt that they had given birth before without complications and therefore antenatal care was not necessary for the later pregnancies, and they did not

want to go to hospitals for delivery. Younger women, however, went to hospitals for delivery on their own initiative but older women did so only on the doctor's advice (Noten, 1985:). Noten also found that when women gave birth in hospitals they looked after children better once they came home because they received advice from the hospital staff on child care and nutrition. This may be one reason why estate women and possibly the urban poor women introduced supplements at later ages.

Education was considered by the older women to be a major factor that changed the health behaviour of the young women. In the estate education had a strong influence on the woman's behaviour regarding her own health, that is the use of antenatal services and the choice of the place of childbirth. However, in both the estate and in the urban poor areas women's education did not have any influence on the introduction of breastfeeding supplements to their babies. There may be three possibilities why the estate and urban poor women behaved differently, in this regard, from women in other areas. They may not have reported occasional feeding of various foods; or they may have accurately followed the instructions of the health worker; or because they are culturally different from the others they did not introduce any supplements in the first few months.

This chapter has shown that, as with health treatment, preventive health practices have changed in response to both the provision of new health facilities and changing health behaviour. For example, almost all mothers in the low-country now bear their children in hospital. This is partly in response to the provision of suitable health facilities, but it also reflects a change in the behaviour of women. As discussed in Section 6.2.2, Sinhalese women in the past had their children at home but they now prefer to have them at hospital. They now believe that this is the appropriate place for childbirth, a feeling no doubt encouraged by the public health workers, but which is also in conformity with indigenous concepts of health.

Unlike the Indian Tamils of the estates, they do not feel that hospitals are unclean places, subject to ritual pollution. Indeed, most Sinhalese women nowadays feel that childbirth at home is unclean. Even in ritual terms, for the Buddhist Sinhalese a hospital is a good place to bear children. Childbirth is a time when a woman and her baby are threatened by pollution; to ward off the spirits a woman needs company. In this sense a hospital is a good place to give birth; there is much company. It does not matter if this company consists of strangers - other expectant mothers.

The Tamil estate women behave differently. It is partly that hospital facilities are not as easily available, but it is apparent that the differences in behaviour are more than this. They are more confident in the company of the older women such as the TBAs, mainly because these are women of their own community who understand their ways and with whom they can communicate. The do not regard home birth as unclean, and regard hospitals as foreign. They also regard the hospitals as unclean, and ritually regard the staff and other women, who are likely to be mostly Sinhalese, as a likely source of danger, particularly of spirits, or at least as not being a protection. The reason that Muslim women do go to hospital may be partly that they have less belief in spiritual pollution, and besides are more integrated with the Sinhalese community.

In some ways the most revealing difference between the low-country people and those in the estate is not in the use of hospitals but in the use of professionals in home births. The low-country people prefer professionals even when they do not use hospitals, the estate people rarely do. This, however, is not simply a question of attitude to Western medicine; it is also that the professional health worker is usually a member of the local community in the low-country while the Sinhalese health worker in the estate is not. Clearly, in this example the low-country women are more accepting of new forms of health behaviour, but the reasons are not

straightforward; it is not simply a matter of being open to new ideas. Differences in the use of antenatal care reflect the differences in the use of hospitals and professional care at birth, with the estates less likely to use them. Interestingly, however, the differences are much less for the use of professional antenatal care than for birth practices.

Significantly, there is also an acceptance especially among the Sinhalese, that women are largely responsible for their own health and that of their children. If they are interested, for example, in antenatal care they are entitled to decide on it and to take the initiative of attending. Part of the difference with estate Tamil women is, as noted in Chapter 4, that they have few rights over their own health behaviour.

Changes in breastfeeding also reflect a combination of factors. An important improvement is that babies nowadays are much more likely to be fed colostrum, especially in the low-country. This is largely because most low-country babies are born in hospitals and nurses nowadays advise mothers to feed colostrum to their babies. In the estate where babies are usually born without professional assistance there has been much less change. However, length of breastfeeding is declining, especially among more educated women. This may reflect new ideas, as well as a higher proportion of women who work away from the home and are consequently unable to breastfeed long. This is one area where new ideas are acting in ways contrary to good preventive health.

Immunization rates similarly reflect differences in health services and in behaviour. The estate immunization rates, while rising, remain lower than low-country rates. Part of the reason is the low proportion of births in hospital for those types of immunization given soon after birth, but it also reflects a weaker health service, and a generally greater resistance, or indifference, to immunization programs.

The older women's responses on health behaviour reflect the combination of improved health facilities and changes in the behaviour of young women towards the health of their families. There is a much greater availability of health services today, but equally the behaviour of the young has played an important part in using them. As with health treatment, this has also been important with regard to preventive health. It is more difficult in regard to preventive health than in the case of health treatment to say whether health behaviour reflects older beliefs because of the multiplicity of factors involved. However, the greater acceptance by the low-country population of new preventive health behaviours indicates that this is the case.

Chapter 7

Conclusion

7.1 Introduction

Sri Lanka is well known for the unusually rapid mortality decline that took place in the space of a few years after 1945 and the low levels of mortality achieved thereafter. At present, Sri Lanka has easily the lowest levels of infant and child mortality, and the highest expectation of life at birth for both males and females in South Asia, and a record better than most in the generally wealthier Southeast Asian region. The mortality decline in the 1940s coincided with the successful campaign against malaria, but also with the improvements and the continuing spread of the modern health system in Sri Lanka. While both these factors have undoubtedly been very important in the mortality decline and the subsequent sustained low levels of mortality, other factors have also played important roles, particularly the health behaviour of the people, and the social changes brought about by high and rising levels of education which contributed to the acceptance of the new system of medicine.

The thesis examined the contemporary health care behaviour, curative and preventive, of Sri Lankans: Sinhalese, Tamils and Moors. It explored the ways in which Sri Lankans treat illnesses in the family, and how treatments differ by the level of education and other characteristics of the family. The thesis explained why people use particular forms of treatment for specific illnesses. The factors examined included the cultural perception of the cause of illness, access to and cost of health services, decision-making power within the family, ethnicity and education.

The preventive care used by the family, particularly the mother, is also addressed by the thesis. I have examined the care women take of themselves during pregnancy, infant feeding practices, immunization, and behavioural differences by mothers' demographic and socio-cultural characteristics. The thesis also reviewed the views of the elderly members of the study communities as to how the health of Sri Lankans has changed since they were young.

7.2 Summary of findings

Chapter 4 of the thesis examined the reported illnesses from which people in the study areas were suffering at the time of the survey, and the ways in which they coped with their illnesses. The urban slum residents appeared to have under-reported the occurrence of minor illnesses such as common colds as it was observed at the time of survey that most children in the area had colds. The neglect of the common cold in slum areas and the unfavourable environmental conditions could have been contributory factors for the high incidence of bronchitis and pneumonia in these areas. In contrast, in the urban middle-class and rural areas people took such minor illnesses very seriously and promptly treated them, mostly with home-made herbal medicine (self-treatment). It was reported in in-depth interviews by many Muslims in urban slums that they had no knowledge of home-made medicine, while the Sinhalese living in the same area claimed they often used home-made herbal medicine. The important factor may not have been the use of the herbal medicine but a whole range of greater care and sensitivity of which this was an index.

Modern medicine is by far the most popular type of medicine used by the respondents in all survey areas. Many factors explain this. One is easy access to free health services; a second is the perceived efficacy of the modern

medicine; and a third is that the improved education of the Sri Lankans encouraged innovation such as trying new forms of treatment. It is noteworthy that the traditional medical system of Sri Lanka was essentially a pragmatic approach to treatment which provided a way of classifying disease by supposed cause, and then suggested appropriate treatments. While its explanation of disease causation may differ from that of modern medicine, its pragmatic approach to disease treatment facilitated the acceptance of new methods of disease treatment.

Estate people, however, use self-treatment for most illnesses of the sick at the time of survey. This was explained as being due to the cost of private treatment; to the distance to the nearest government hospital providing free medicine, since the estate's own dispensary did not have enough medicine and the estate doctor preferred his clients to pay money; and to the scarcity of time that the working women had for other activities. This may indicate that proper treatment is delayed until the time that estate people could go to the doctor, for example till the weekend when they go for their weekly shopping. It was also suggested that the estate populace are somewhat reluctant to use hospitals and other modern medical facilities because they perceive them to be alien to their society, representing Sinhalese dominance, and because of cultural sensitivity, for example to women attending hospital.

Traditional forms of medicine (Ayurveda and supernatural practices) still have an importance in Sri Lankan society. Ayurvedic medicine is popular among both rural and urban Sinhalese, particularly for treating chronic conditions. Among the Muslims and the Tamils the use of talismans and prayers and vows to God are common treatments. In Sinhalese areas the practice of supernatural cures such as exorcism and the tying of yantras (talismans) has declined over the years, but has not fully disappeared. Today

such traditional treatments are mainly used as a last resort for selected illnesses, such as mental illnesses, when everything else has failed. Nevertheless, practices such as making vows at times of infectious diseases and giving alms to nursing mothers are still commonly performed by the Sinhalese. The difference between the ethnic groups in terms of using supernatural cures not only may be due to different cultural beliefs in supernatural treatment but also may reflect differences in the costs of the rituals used by particular communities, as well as differences in educational attainment of community members.

An important finding in terms of health treatment behaviour is that, although some preference is given to males in the society, this does not generally translate into discrimination against females in health treatment or against children as compared to adult males. These are undoubtedly both important factors in the remarkable extent of Sri Lanka's mortality decline.

A notable feature of Sri Lankans' health behaviour, particularly that of the Sinhalese, regardless of their religion, education or the age and sex of the patient, is their willingness to change treatment when one treatment type is evaluated to be ineffective. Usually people started with self-treatment, generally herbal or shop-bought analgesics and other medicines available to them, subsequently seeking professional treatment. On average, people persisted with each treatment for about three days, and then, if the treatment did not seem to be effective, they returned to the same doctor or switched to a different doctor for further treatment. In the estate, people continued to use self-treatment as the second and third treatment to a greater degree than did people elsewhere. They usually delayed seeking professional assistance until they had time off work, normally at the weekend. The analysis of the process of health treatment clearly showed that supernatural treatments are used

mainly as a last resort, except for mental illnesses, or when the cause of illness was unclear to the people.

The unusual pattern of behaviour at times of illness, that is the evaluation of the care received and the changing of treatment if the patient did not appear to be responding to it, is the result of many forces working in Sri Lankan society . First, there is the desire to maintain good health within the family, a fact emphasized in Buddhism; second the availability of free and paid health services; third, the highly developed transport system that gives accessibility; and fourth the freedom and ability of females to go out and discuss health matters with the authorities. Female freedom, however, is enjoyed most by the Sinhalese women owing to a mutually reinforcing combination of socio-cultural factors, such as a relatively open family system, and a high regard given to women in Buddhism, and their comparatively high educational levels, but less freedom is given to Muslim and Tamil women. Education has been comparatively denied to Muslim women, and to some extent Indian Tamil women, precisely because it is feared that it will make them more autonomous. The availability of schooling has compounded the pre-existing situation by increasing freedom among females in those communities where the comparative freedom of girls made female education possible.

Chapter 5 analysed the data from the Sri Lankan Demographic and Health Survey (SLDHS) and the Sri Lankan Demographic Change Project (SLDCP) to examine the preventive health practices that affect women and children in Sri Lanka. The SLDCP findings show that, at present, most Sri Lankans obtain antenatal care, go to hospitals for childbirth, get their children immunized, and breastfeed babies soon after birth, but not to the same extent as the SLDHS recorded. However, there are notable differences in these areas by ethnicity of the mother, which may be explained in terms of their

communities' attitudes to female education and female autonomy. Obstacles to further mortality reductions in the country as a whole may lie among the ethnic minorities where women do have a less important role in household decision making and less education.

In Chapter 6 I have examined the changes that have taken place in aspects of preventive health care over the last five decades and the responses of women over 50 years of age to the changes in the health situation in Sri Lanka. It is clear that the use of antenatal care has increased rapidly in urban middle-class and rural areas, while slower but still significant change occurred in the estates. Education, the age of the woman and place of residence affected the use of antenatal services. The more educated in the urban middle-class and rural areas were more likely to seek some form of antenatal care, but education did not make a significant difference in the estate where over 50 per cent of the women did not receive any antenatal care. Younger women (aged 15-39) in all areas were more likely than the older women (aged 40+) to have received antenatal care.

Alone among the survey areas, in the estates health conditions had deteriorated or had not improved significantly. The reasons for this are the lack of facilities, lack of transport, poverty, women's low level of education, a generally lower status of Indian Tamil woman, and the lower status of the Indian Tamil community in the larger community, and cultural problems.

The older respondents attributed much of the improvement in the health status of Sri Lankans to the increased numbers of health facilities, but they also stressed the importance of the improved education of women and the social changes that had given women increased autonomy within the household and a greater feeling of responsibility for their families' health.

7.3 Some conclusions

It might be assumed that traditional health beliefs would be weaker among an educated population: however, this study has found the situation in Sri Lanka more complex. The treatments for illness have changed drastically without a concomitant change in health beliefs. Indeed, although most Sri Lankans hold traditional beliefs concerning illness causation and the appropriate treatment, this does not prevent them from using modern medicine in preference to traditional medicine.

Sri Lankans believe, and have long believed, that illnesses can be cured through treatment and do not have to be left to fate. For instance, the illnesses that people suffer today as a result of changes in lifestyle such as heart attacks and cancer are regarded as being a result of bad *karma* (fate). Nevertheless, Sri Lankans recognize that these diseases can be treated, and on occasion cured through modern treatments.

While Ayurvedic medicine is used mostly for a few specific diseases, in a less obvious way it is used for other sicknesses too. Many people, for example, use Ayurvedic medicine as the follow-up treatment to restore the equilibrium of the bodily humours after modern medicine has quickly cured the symptoms of the disease.

The mortality decline in Sri Lanka is not entirely explained by the implementation of modern health care. Though the modern health system was an essential prerequisite for mortality decline, it would not have been effective had people not willingly accepted and experimented with the new treatments. Sri Lankans were willing to accept the new health system since they saw sicknesses primarily as a physical problem, rather than, as is often the case elsewhere in South Asia, as a divine punishment. This attitude may be largely

due to the influence of religious teaching, particularly of Buddhism. Sri Lanka's Buddhist heritage encourages men and women to think for themselves and to make decisions independently. The Buddha said `Man is his own master, and there is no higher being or power that sits in judgement over his destiny...'(Rahula, 1967: 1,8). The Buddha taught, encouraged and stimulated each person to free himself from all bonds through personal effort and by developing his intellect. The teachings of Buddha and the Ayurvedic concepts of health have influenced people's practices. It can be concluded, therefore, that the Sri Lankans' intellectual heritage, far from hindering Sri Lanka's mortality decline, made a fundamental contribution to it.

Indeed, the fact that traditional forms of treatment such as Ayurveda assumed that illness could be treated helps to explain Sri Lankans' willingness to experiment with new forms of treatment. By providing theories of illness causation and treatment which people comprehend, the traditional theories of disease causation enable Sri Lankans to believe that they can control their lives and that they are not simply subject to the whims of fate.

The traditional forms of treatment also help patients in ways that modern medicine fails to do. In particular, they offer psychological support, partly by offering an explanation of illness, but also by involving the patient in his or her own treatment. In a devil dance (exorcism), for example, the patient is actively involved in fighting off the devil which has possessed him. This characteristic of traditional treatment, which is of particular value in treating illnesses with psychological origins, gives Sri Lankans a strong sense of control over their lives.

While the Sri Lankans' health behaviour, especially the rapid changes in treatment, is of interest and may be a major explanation of low mortality, it has some negative aspects. When people change the type of treatment by abandoning the previous treatment, this can have an adverse effect on their health, especially if the previous treatment has been antibiotics. A major contributory reason why Sri Lankans change from Western treatments is poor communication by Western-trained doctors in Sri Lanka who fail to explain adequately their prescriptions or what the patient's illness is. This is also an important explanation for the continuing adherence of Sri Lankans to traditional theories of illness causation. If people are given proper advice by the doctors on their illness and the treatment, they are more likely to adhere to the instructions, but Sri Lankan doctors rarely do so, in part because many apparently believe it would diminish the respect they feel is their due.

7.4 An overview

In Chapter 1 I noted that a number of theories had been advanced to explain the dramatic declines in mortality that have taken place worldwide. The two most influential of these theories were those offered by McKeown and Preston (see Section 1.3). I noted that these theories did indeed help to explain some of the changes that had taken place, but that they did not take into account the impact of health behaviour, especially in explaining differentials in changing health behaviour. The importance of these factors has been emphasized by Caldwell (1993). Clearly if health behaviour was not a vital factor in understanding mortality decline, there would not be such a close correlation between low mortality and education, as has been demonstrated in numerous countries worldwide and is also clear from this study. Sri Lanka is a particularly interesting country in which to explore the impact of health

behaviour given its very impressive health indicators for its level of economic development.

It is clear that increases in income, better nutrition, improvements in sanitation, the malaria campaign, the earlier hookworm campaign, and the spread of health services have all played a part in Sri Lanka's transition to low mortality. To this extent, the Sri Lankan evidence supports McKeown and Preston. However, my analysis of the Sri Lankan evidence has demonstrated the vital contribution of health behaviour to the mortality decline. It is clear that a strong awareness of ill health and the need for appropriate treatment has played a major part in this decline.

As I showed in Chapter 4, Sri Lankans respond quickly to ill health, and in general respond appropriately to lack of progress in treatment. They may change treatments too rapidly where the required treatment is lengthy, but normally these are cases of chronic illness for which treatments in Sri Lanka are in general lacking, or psychological illnesses, for which traditional well understood treatments may be appropriate.

In the terms used by Caldwell et al. (1989), Sri Lankans are sensitive to illness. This sensitivity to illness is difficult to explain. At first glance the concept of sensitivity as an explanatory factor would seem unlikely, given that, as shown in Chapters 1 and 4, most Sri Lankans have a very limited understanding of modern concepts of disease causation. What the Sri Lankan situation reveals is that understanding of the causes of illness whether correct or not should not be confused with awareness of the illnesses themselves.

Three major explanations for Sri Lankans' sensitivity to illness have been demonstrated in the thesis. First, Sri Lankan indigenous concepts of health treatment, though different from modern concepts, are in many ways

analogous, and acted to heighten awareness of the need for treatment even by Western medicine. Secondly, Sri Lanka has a social structure which enabled responsiveness to illness; women, for example, were able to take the initiative in treating their children when they were ill. Thirdly, Sri Lanka's high education levels have evidently made Sri Lankans more aware of and responsive to ill-health. These three factors have contributed to both health treatment and preventive health care, though in different proportions, indigenous concepts being generally more important in health treatment, and social structure in preventive health.

In Chapter 4 health treatment was examined. The analysis of the findings of the Sri Lanka Demographic Change Project demonstrated extremely rapid progression from one treatment to another, but it was also clear that there were considerable variations between the localities surveyed. These differences were in part related to the localities' characteristics, in part to the socio-economic characteristics of the respondents, in part to differences in education levels, but most importantly to religion.

In urban poor areas there was less use of traditional home treatments such as herbal cures. The consequence was that a higher proportion of all treatments adopted involved modern medicine. Part of the reason why use of home cures may have been low is that it was not possible to grow the herbs used for Ayurvedic and herbal medicines in the urban poor areas, and that a hospital was close to the two largest of the urban poor areas surveyed. These, however, are not sufficient explanations. The low level of use of traditional medicine did not translate into greater use of modern medicine, just into less use of medicine altogether; the urban poor areas had the lowest use of modern medicine of any of the low-country areas surveyed. Another explanation may be poverty, but this too is not an adequate explanation, for in material terms

the urban poor areas were no worse off than rural areas but their health behaviour was very different.

Chapter 4 showed that the reason for the lack of use of traditional medicine by the inhabitants of the urban poor areas was that they did not believe in the value of traditional medicine to the same extent that the people of the other low-country localities did, and that this somewhat undermined their general respect for the efficacy of medicine of any type. A large part of the explanation may be related to ethnic and religious differences between the different localities. The majority of the urban poor were Muslim Moors who had quite different attitudes towards health treatment from the Buddhist and Christian Sinhalese. Although the Moors' traditional practice of medicine, Unani medicine, had much in common with Sinhalese concepts, in general Moors tended to be less aware of illness as is indicated by their poor reporting of such illness as colds. The attitude of many Moors was essentially that their well-being was up to God; for this reason the most common traditional response to illness was to make a vow to God. In contrast, for the Sinhalese Buddhists, health was not essentially a religious matter; it was a matter for each individual to be concerned with. Sinhalese Theravada Buddhism makes a distinction between this world, the world of illusion, and what was essentially the concern of Buddha, the underlying reality, of which most people in their ignorance are barely aware. Buddha was not essentially concerned with this world, regarding it as impermanent, other than in having a general distaste for its innate decay and suffering. Buddha's teaching was primarily concerned with how to escape this world to Nibbhana (in Sanskrit Nirvana). This religious belief might be expected to discourage the concern of individual Buddhists with their earthly well-being, but, in fact, it emphasized that Buddhists were responsible for their own well-being, a point stressed by

Buddha himself. In Theravada Buddhism all individuals are responsible for their own spiritual and physical well-being, and cannot rely upon faith or the compassion of a God.

Buddha's emphasis on harmony and the right balance in order to obtain Nirvana reinforced the notion of the need to maintain the right balance in body and mind in respect to health. It is significant that Buddha rejected practices that involved subjecting the body to self-mortification. After refusing food Buddha found that his physical weakness was interfering with his meditation and that the inward calm required for enlightenment depended on physical well-being (Conze, 1959: 46). While there is a religious need for good health in Buddhism how this was to be achieved was a practical and essentially secular matter. This is in contrast to beliefs held by many Muslims, Hindus and members of some faith-healing Christian sects that good health depends on the benevolence of God or gods. Buddhism has consequently acted to promote a secular concern for guarding the health of oneself and of one's family.

Apart from the urban poor areas the other area to differ significantly in health behaviour was the tea estate. In this locality people were much less likely to attend hospital for treatment or, as noted in Chapters 5 and 6, for childbirth. I examined a number of reasons for these differences, including problems of transport, low socio-economic status and particularly education. I also examined the particular position of the majority community in the estate, the Indian Tamils. It was suggested that their very minority position might make them more reluctant to accept institutions, such as the medical system, which they associate with the dominant community. Religion too may act against the Hindu Tamils' use of health facilities. Even though, like Buddhism and unlike Islam, Hinduism distinguishes between this world and the underlying reality, and also has the concept of the right balance of body and

mind, the estate Tamils apparently have a much more fatalistic attitude to good health than the Sinhalese. Part of the reason may be that the Hindu gods are involved in this world as well as with higher concepts of ultimate salvation. If an individual has cholera prayers may be offered to the goddess Mariamma. It is true that the Sinhalese Buddhists too pray to gods and goddesses, many of whom are of Hindu origin and are similar to or even the same as the ones Hindus pray to. However, they are not recognized as such by Buddha, and are in effect simply an alternative form of treatment.

Furthermore, though Hinduism has a concept of bodily balance, in the estates Hinduism seems to be more closely linked to ritual concepts of pollution. Part of the difference may be the effect of the Buddhist reform movement of the nineteenth century which encouraged a view of Buddhism as essentially scientific, in line with Western notions of rationalism.

However, while these speculations may apply to the estate Tamils, this does not mean that they apply to all Hindu Tamils in Sri Lanka. The Sri Lankan Tamils, unlike the Indian Tamils of the estates, have similar health statistics to the Sinhalese. Unfortunately few Sri Lankan Tamils were surveyed in the Sri Lankan Demographic Change Project because of the political situation and those who were surveyed were mostly living in the urban poor areas and therefore may not be representative of that community as a whole; nevertheless the Moors in this area were reasonably typical of those unsurveyed districts where most Moors live.

It is clear then that, in terms of health treatment, and to a lesser extent preventive health, indigenous notions of health have been a critical factor in Sri Lanka's good health record. The other factors noted earlier, social structure and education, have also been important. The relatively high position of

women and the open family structure, particularly of Sinhalese society, encouraged rapid response in health treatment. The ability of Sri Lankan women to take the initiative in seeking treatment means more than just that there are more individuals who can decide that attention is required urgently; women are generally in closer touch especially with their children's well-being, and are likely to place a higher priority on it, than men who may regard too much attention to illness as being beneath their dignity. Furthermore, as I noted in Chapter 4, the relatively egalitarian structure of the Sri Lankan family, with its emphasis on the nuclear unit, meant that equal attention to the welfare of all family members was acceptable. In the hierarchical joint family of India, Pakistan and Bangladesh, too much care for children and the junior women may be frowned upon as detracting from the respect entitled to the senior members of the family and as undermining the family structure.

The relatively high status and decision-making influence of women is particularly important in relation to preventive health behaviour. It has made it more acceptable for women to go to health clinics and to hospitals for childbirth and to accept health workers into their homes, for example, for antenatal care.

Sri Lanka's relaxed family structure may also have contributed to an acceptance of innovation. Where women have little status—being restricted to subservient daughter-in-law status—they are in a very weak position to use their initiative and undertake new activities or to believe in ways other than those sanctioned by tradition. Indeed, a woman may gain a certain strength against others, particularly other daughters-in-law, by justifying her actions as properly in keeping with tradition. Where women have a higher status, as in Sri Lanka, they are in a better position to adopt innovative behaviour, for example in the case of health.

Education has also played an important part in increasing sensitivity to health as is evident from the close association between good health and education seen in the analysis. Education has had this effect, in part, by directly promoting good health. Sri Lankan schools teach good preventive health practices such as washing the hands, drinking boiled water, washing cups and plates, even using one's own cup and plate, and, in home science classes, good pregnancy and baby care. They also teach people to be more receptive to new ideas and new behaviours in general. Education has also created the concept of a secular body of knowledge alternative to accepted tradition not totally opposed to the Buddhist view of knowledge, Buddha having taught the importance of learning and logic instead of accepted beliefs. The emphasis of the Buddhist reform movement in the nineteenth century on Buddhism as a rational scientific belief, and not truly as a religion at all, has reinforced this acceptance of new beliefs.

Further, education has reinforced the position of women in the society, though one of the reasons for the high level of female education in Sri Lanka is that women's status was already high and it was acceptable for girls to go to school. One of the major ways in which education improved the position of women was by giving them a source of authority outside the household; an educated girl could go against the advice of her elders including her mother and mother-in-law, who were usually less educated, by claiming to know better. In this way education has made a major contribution towards increasing equality within the family between the sexes and by age.

In conclusion, this thesis has demonstrated the importance of the contribution of health behaviour to understanding changes in mortality, and more generally in health. Health behaviour has not had this effect in isolation, but in combination with a well-developed, easily accessible and affordable

public health system, referred to in Chapter 1 as supply factors, in contrast to the demand factor of health behaviour. In this thesis I have not concentrated on the public health system but have treated it as a given. The point remains, however, that the public health system could not have had the effect it did if the demand for health services were not there. The thesis has revealed that health behaviour is extremely complex in its nature and in terms of its impact on such outcomes as good health. A range of factors have been involved in contributing to Sri Lankan's favourable health behaviour, including compatible indigenous beliefs, a relaxed family structure, a high degree of female autonomy and such modern factors as education.

The thesis has also shown that the relationship between health behaviour and health is not always straightforward. For example, it might be expected that indigenous concepts of illness and treatment would contribute to good health to the extent that they were similar to modern concepts of illness and treatment. However, as has been shown, Sri Lankan concepts of illness and treatment contributed to an awareness of health behaviours even though in many ways the traditional aetiologies were fundamentally different from the modern ones. Crucially, they did not conflict with modern concepts of treatment, and were in conformity on some fundamental issues, notably on the essentially secular basis of treatment.

Similarly, the impact of education, particularly on the status and autonomy of women but also in terms of the acceptance of new health behaviours, is partly due to the society already having pre-existing tendencies this direction. Many of these tendencies may be shared by other countries which have also had dramatic declines in mortality.

This thesis is an exploration of the contribution of health behaviour to the mortality transition. The thesis, in this sense, is a case study of health transition theory, and shows how various factors affecting health behaviour, including notions of health and treatment, education, female status and decision making within the family combine to influence the use made of available health services.

This thesis is able to explore health behaviour because of the combination of detailed in-depth interviews and structured interviews employed by the Sri Lankan Demographic Change Project which makes it possible to examine in detail many issues that would have been obscured in a conventional data set.

A valuable contribution to this endeavour is the information provided by older respondents' experience of the changes in health behaviour during their lifetimes. These data sources have enabled the study to identify in an innovative way the factors affecting Sri Lanka's long-term mortality transition.

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Appendix 2.1 Mortality statistics (1901-1990) and expectation of life at birth (1893-1991) in Sri Lanka

Period	CDR ('000)	IMR ('000)	MMR ('000)	Period	Life expectancy (years Male	Female
1901-05	26.7	171	-	1893-01	36.4	34.2
1906-10	30.8	189	-	1910-12	33.4	29.3
1911-15	30.6	201	-	1920-22	35.4	31.0
1916-20	30.1	190	-	1945-47	47.8	44.8
1921-25	27.8	190	20	1946	43.6	41.6
1926-30	25.1	175	19	1947	52.7	51.0
1931-35	24.6	183	21	1948	54.9	53.0
1936-40	21.4	160	19	1949	56.1	54.8
1941-45	19.9	131	15	1950	56.4	54.8
1946-50	14.3	101	9	1951	56.1	54.0
1951-55	11.2	75	5	1952	57.6	55.5
1956-60	9.5	63	4	1953	58.8	57.5
1961-65	8.4	54	3	1962-64	63.3	63.7
1966-70	7.9	51	2	1964	63.0	63.6
1971-75	8.2	47	1	1965	63.7	65.0
1976-80	6.9	39	0.8	1966	63.6	65.0
1980	6.2	34	0.9	1971	64.2	66.7
1985	6.2	24	0.5	1979	66.1	70.2
1990	5.8	19	-	1980-82	67.7	72.1
				1991	70.1	74.8

Note: CDR: Crude death rate
IMR: Infant mortality rate
MMR: Maternal mortality rate

Sources: United Nations, 1976: Annex 3.
Ministry of Health, 1984: 10.
Department of Census and Statistics, 1986b.
Ministry of Health and Women's Affairs, 1992.

Appendix 4.1 Grouping of illnesses

Fever
Headache
Cold, Cough,Catarrh
Infectious and parasitic diseases
- worms
- hepatitis
- measles
- mumps
- chickenpox
- malaria
- tetanus
- smallpox
- filariasis
- yellow fever
- swollen glands
- polio

Intestinal infection
- stomach ache, stomach upset
- diarrhoea
- nausea, vomiting
- loss of appetite
- typhoid
- appendicitis

Other respiratory disease
- pneumonia
- asthma
- tonsillitis
- bronchitis
- ear ailment
- tuberculosis
- sinus problems
- nosebleed

Nutritional deficiency
- weakness
- dizziness/fainting
- failure to thrive/weight loss
- anaemia
- diabetes
- goitre
- malnutrition

Diseases of circulatory system
- chest pain
- heart ailment
- poor circulation

Chronic rheumatism
- rheumatism/arthritis/ body aches
- rheumatic fever
- swollen limbs
- leg pains

Other chronic conditions
- high blood pressure
- paralysis
- numbness
- varicose veins
- epilepsy
- unable to walk
- coma
- rickets
- low blood pressure
- haemorrhoids
- hernia

Accidents and injury
- wound/accidental injury
- poisoning
- fracture
- bruising

Problems related to female reproductive physiology
- childbirth
- pregnancy
- menstrual disorder
- breast abscess
- miscarriage/stillbirth
- sterility
- weaning
- postpuerperal depression
- leucorrhoea
- hysterectomy

Skin disease
- eczema
- boil
- skin disease/rash/sore
- leucoderma

Mental and psychological illnesses
- mental illness
- frustration
- possession
- misfortune
- malign influence of planets
- terror
- evil eye
- nightmare/fear in dreams
- influence of devils
- *balagiri dosaya*
- under evil spell, bad omen
- influence of ghost

evil mouth
mental retardation

Urinary and bladder problems
kidney ailment

Fit/convulsion
fit or convulsion

Other illnesses
tumour
cirrhosis
cancer
eye ailment
toothache
drug addiction
deafness
after-effects of surgery
other minor ailment

Appendix 4.2 Proportion sick at the time of survey with specific diseases by residence.

Illness group	urban middle-class	urban slums	rural areas	Tea estate
Fever	9.4	17.1	8.7	9.8
Cold,cough,catarrh	18.7	13.3	23.5	24.6
Other respiratory diseases	17.5	17.2	6.1	8.2
Infective & parasitic disease	1.2	3.3	-	3.3
Intestinal infection	4.1	6.6	2.6	8.2
Chronic rheumatism	9.9	6.1	17.4	3.3
Other chronic conditions	9.4	5.0	7.0	6.6
Skin disease	4.7	8.8	8.7	6.6
Mental & psychological diseases	2.3	1.1	1.0	0.0
Accident & injury	5.3	5.0	7.0	3.3
Diseases of reproductive system	0.6	1.1	0.0	0.0
Diseases of circulatory system	7.0	5.0	2.6	0.0
Nutritional deficiency	2.9	2.8	2.6	9.8
Urinary and bladder infection	2.3	1.1	3.0	0.0
Headache	1.2	4.4	1.7	6.6
Other	2.3	1.7	7.8	9.8
Total	100.0	100.0	100.0	100.0
Total no. sick	171	181	115	61

Notes: Other includes toothache and other minor ailments

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

Appendix 4.3 Households keeping modern and traditional home medicine at time of the survey and their use in the study areas (%).

	Area				
	Urban middle class	Urban poor areas	Rural area[a]	Estate	Illnesses for which medicines were used
Analgesics (disprin and panadol)	63.2	34.8	64.1	53.8	fever, headache, cold, cough, rheumatism, dizziness, toothache, general ailments
Vicks & balm	5.9	14.0	1.1	3.2	headache, cold, cough, sinus trouble, chest pain
Gripe water	4.4	1.5	2.0	1.2	diarrhoea, stomach ache (for children only)
Asamodagam	1.5	2.3	3.6	2.4	diarrhoea, worms, vomitting (for children only)
Medicinal oil	8.2	4.9	13.8	13.0	chest pain, leg pains, rheumatism, injury, eye ailment, bruising, skin diseases
Siddhalepa	29.4	10.1	22.6	43.9	headache, arthritis-rheumatism, chest pain, tonsillitis
Siddharta oil	5.5	1.0	6.5	12.3	chest pain, heart ailment, rheumatism
Coriander, Wenivelgeta	9.3	10.6	11.7	46.2	measles, cold, cough, fever, tetanus
Antiseptic	10.2	0.5	4.3	2.4	injury, skin diseases
proportion of the households kept at least one medicine	76.7	48.0	77.4	85.0	
Total no. of households	657	615	349	253	

Note: a Rural represents Loluwagoda only.

Source: Primary analysis of Sri Lankan Demographic Change Project data, 1985 and 1987.

Many of the households interviewed kept medicine at home for minor illnesses. This indicates that Sri Lankans have some knowledge of treatments for various ailments. The medicines range from traditional herbs to modern

drugs such as Disprin and aspirin. Only those medicines which most households had commonly kept at the time of the interview are listed in the table together with their use. It was found that, at the time of the interview, 77 per cent of urban middle-class, rural households and 48 per cent of households in urban poor areas and 85 percent of estate households kept at least one medicine at home. The most common forms of medicine kept at home were modern analgesics and *Siddhalepa*, a traditional form of ointment, which can be used for many illnesses. These medicines are usually the first form of treatment used. The proportion of households who kept some medicine in urban poor areas was much lower, particularly in the two main Muslim areas, Maligawatta and Jamma Masjid Road: 45 per cent in the former and 44 percent in the latter. In the other urban poor area, New Kelani Bridge, 52 per cent kept at least one medicine at home. In all Sinhalese-dominated areas and in the estate the proportions of households keeping some medicine is strikingly high. This suggests that compared to Muslim dominated areas, in other areas people had a better knowledge of home treatment or are more aware of illnesses. Perhaps the alternative explanation could be that Moors did not find their form of indigenous medicine (Unani) in the market.

Appendix 5.1 Mean ages at which solid supplements were introduced in all survey areas - an analysis of variance

Area	Mean	N
Urban middle class	5.35	188
Urban poor	7.63	218
Rural	6.21	134
Estate	7.68	134
All areas	6.72	674

Source of variation	Sum of squares	DF	Mean square	F	Sig. of F
Main effects	693.220	3	231.073	24.203	.000
Area	693.220	3	231.073	24.203	.000
Explained	693.220	3	231.073	24.203	.000
Residual	6396.781	670	9.547		
Total	7090.001	673	10.535		

Source: Primary analysis of Sri Lankan Demographic Change Project Data, 1985 and 1987.

A multiple range test using Duncan range test indicated that rural, urban poor and estate areas are significantly different at .050 level from urban middle-class area. It also showed that urban poor area and estate are significantly different from rural area.

Appendix 5.2 Mean ages at which solid supplements were introduced by mother's education and residence - an analysis of variance

Area and education	Mean	N
Urban middle-class		
0-6 years	6.72	32
7-9 years	5.31	52
10+ years	4.84	101

Source of variation	Sum of squares	DF	Mean square	F	Sig. of F
Main effects	85.638	2	42.819	8.630	.000
Education	85.638	2	42.819	8.630	.000
Total	988.649	184	5.373		

One way analysis of variance

Source	DF	Sum of squares	Mean squares	F ratio	F prob.
Between groups	2	85.6376	42.8188	8.6300	.0003
Total	184	988.6486			

Area and education	Mean	N
Urban poor area		
0-3 years	7.89	91
4-6 years	7.01	78
7+ years	8.12	49

Source of variation	Sum of squares	DF	Mean square	F	Sig. of F
Main effects	47.750	2	23.875	1.486	.229
Education	47.750	2	23.875	1.486	.229
Total	3502.904	217	16.142		

Area and education	Mean	N
Rural area		
0-3 years	6.06	18
4-6 years	6.09	34
7-9 years	6.59	41
10+ years	6.00	41

Source of variation	Sum of squares	DF	Mean square	F	Sig. of F
Main effects	8.518	3	2.839	.532	.661
Education	8.518	3	2.839	.532	.661
Total	702.149	133	5.279		

Appendix 5.2 continued.

Area and education	Mean	N
Estate		
No schooling	7.45	44
1-3 years	8.31	32
4-6 years	7.87	39
7+ years	6.12	17

Source of variation	Sum of squares	DF	Mean square	F	Sig. of F
Main effects	57.388	3	19.129	2.319	.079
Education	57.388	3	19.129	2.319	.079
Total	1113.295	131	8.498		

One way analysis of variance

Source	DF	Sum of squares	Mean squares	F ratio	F prob.
Between groups	1	57.3877	19.1292	2.3189	.0785
Total	131	1113.2955			

Source: Primary analysis of Sri Lanka Demographic Change Project Data, 1985 and 1987.

Appendix 6.1 Types of antenatal care used by mothers' age, education and residence (%).

Urban middle-class (Welisara)	**Age group and education (in years) 15-39 years**			**40+ years**		
	0 - 6	7 - 9	10 +	0 - 6	7 - 9	10 +
None	30.9	16.3	21.8	27.7	43.9	31.3
Professional	64.2	74.0	61.5	60.1	39.5	50.4
Vitamins	4.9	9.6	16.7	12.2	16.5	18.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
Rural (Loluwagoda)		**15-39 years**			**40+ years**	
	0 - 6	7 - 9	10 +	0 - 6	7 - 9	10 +
None	25.8	9.8	22.2	42.6	50.4	27.7
Professional	51.5	69.7	63.3	45.5	31.7	55.4
Vitamins	22.7	20.5	14.5	11.9	17.9	16.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
Estate		**15-39 years**			**40+ years**	
	0 - 6	7 - 9	10 +	0 - 6	7 - 9	10 +
None	62.5	53.8	43.6	61.6	76.6	63.2
Professional	37.5	43.0	56.4	38.4	23.4	36.8
Vitamins	0.0	3.2	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Primary analysis of Sri Lanka Demographic Change Project, 1985 and 1987.

Appendix 6.2 Types of antenatal care used, by year of birth of children and residence (%).

Birth cohort	Urban middle class			Rural			Estate		
	None	Professional	Vitamins	None	Professional	Vitamins	None	Professional	Vitamins
1930-39	50.0	25.0	25.0	100.0	0.0	0.0	100.0	0.0	0.0
1940-49	54.8	35.5	9.7	76.9	15.4	7.7	100.0	0.0	0.0
1950-54	35.5	58.1	6.5	51.5	39.4	9.1	97.2	2.8	0.0
1955-59	34.5	47.3	18.2	46.0	40.0	14.0	66.7	33.3	0.0
1960-64	33.9	46.1	20.0	34.5	50.6	14.9	67.6	32.4	0.0
1965-69	36.0	49.3	14.7	28.4	50.0	21.6	60.8	39.2	0.0
1970-74	30.2	55.6	14.2	26.0	54.2	19.8	66.1	33.9	0.0
1975-79	27.3	66.9	5.8	18.2	62.9	18.9	68.1	31.1	0.8
1980-84	13.7	73.7	12.6	22.7	58.5	18.8	60.3	39.1	0.6
1985-87							35.2	63.0	1.9
Not stated							76.5	23.5	0.0

Note: Row totals for year of birth and antenatal care by residence add up to 100%.

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.

Appendix 6.3 Births at home and hospital by year of birth and residence (%).

Birth cohort	Residence and place of birth					
	Urban middle-class		Rural		Estate	
	Home	Hospital	Home	Hospital	Home	Hospital
1930-39	100.0	0.0	25.0	75.0	100.0	0.0
1940-49	69.2	30.8	67.7	32.3	93.9	6.1
1950-54	30.3	69.7	32.3	67.7	88.9	11.1
1955-59	8.0	92.0	32.7	67.3	73.0	27.0
1960-64	3.6	96.4	20.0	80.0	73.2	26.8
1965-69	3.4	96.6	12.5	87.5	57.7	42.3
1970-74	3.8	96.2	6.2	93.8	50.4	49.6
1975-79	0.7	99.3	5.8	94.2	66.9	33.1
1980-84[a]	1.7	98.3	2.9	97.1	71.3	28.7
1985-87	--	--	--	--	81.5	18.5

Notes: a This should read 1980-85 birth cohort for urban middle-class and rural areas.

Source: Primary analysis of Sri Lanka Demographic Change Project data, 1985 and 1987.